

EPA Region 5 Records Ctr.



246153

SITE ASSESSMENT REPORT  
FOR  
STANDARD SCRAP PROCESSING  
(aka: SCRAP METAL)  
U.S. EPA ID: ILD045698263  
SS ID: NA  
TDD: T05-9402-007  
PAN: EIL0831SAA

MAY 6, 1994

Prepared by: John Nordine Date: 5-6-94  
Reviewed by: [Signature] for Raymond H. Hyslop Date: 5/6/94  
Approved by: [Signature] Date: 5/6/94



**ecology and environment, inc.**

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International Specialists in the Environment

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# **N O T I C E**

Originally, this site was tasked to Ecology & Environment, Inc. under the name Scrap Metal. The actual name of this site is Standard Scrap Processing. All file information, photologs, maps, and text in this report refer to the site by its original tasked name Scrap Metal.

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## **1.0 INTRODUCTION**

The Ecology & Environment, Inc. (E & E), Technical Assistance Team (TAT) was tasked by the United States Environmental Protection Agency (U.S. EPA) to perform a site assessment at the Scrap Metal (SM) site under Technical Directive Document (TDD) T05-9402-007. Activities performed for the site assessment included prepared and implemented Health and Safety Plan; compiled available information; prepared and implemented sampling plan; evaluated threat to human health and environment; and provided photodocumentation. The following report provides a summary of these activities.

## **2.0 SITE DESCRIPTION**

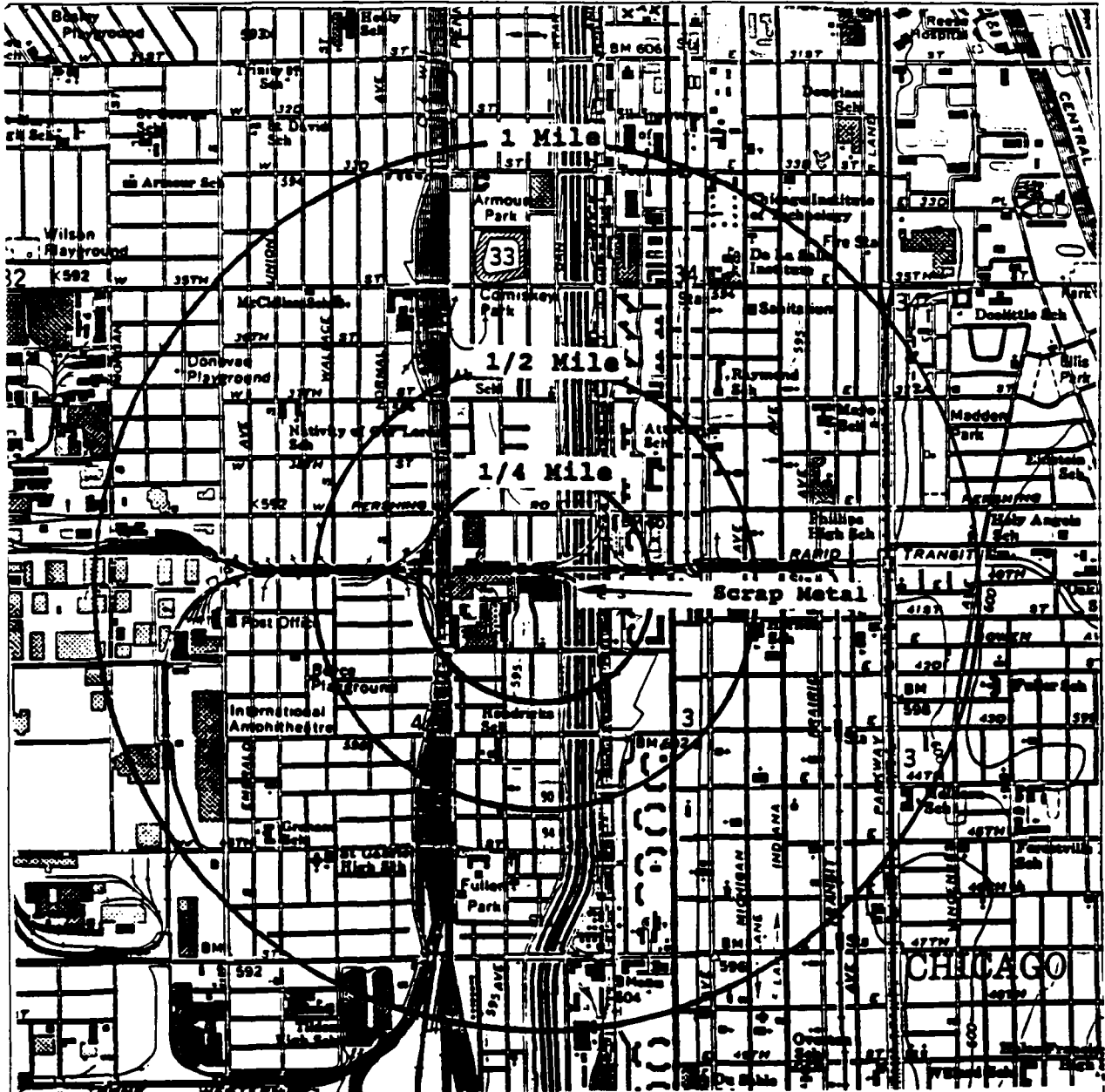
The SM site is located at 4004 South Wentworth Avenue, Chicago, Cook County, Illinois, Latitude 87° 37' 55" north, Longitude 41° 52' 50" west, (see Figure 1, Site Location Map). The SM site is located in a industrial and residential area. The facility is an active 3-acre scrap yard involved in the reclamation of metals. Past and present operations have taken place on two distinct parcels of property separated by Wells Avenue.



The east lot is approximately 2.5 acres in size and the west lot is approximately 0.5 acres (see Figure 2, Site Features map). The east lot has a office building, a small receiving shed, two aluminum furnaces, a ferrous metal sorter, a shredder, and large piles of scrap metal located at various points throughout the property. The west lot has a small scale house used to weigh incoming scrap metal trucks and is also used to park semi-trailers. A railroad spur cuts across both lots diagonally.

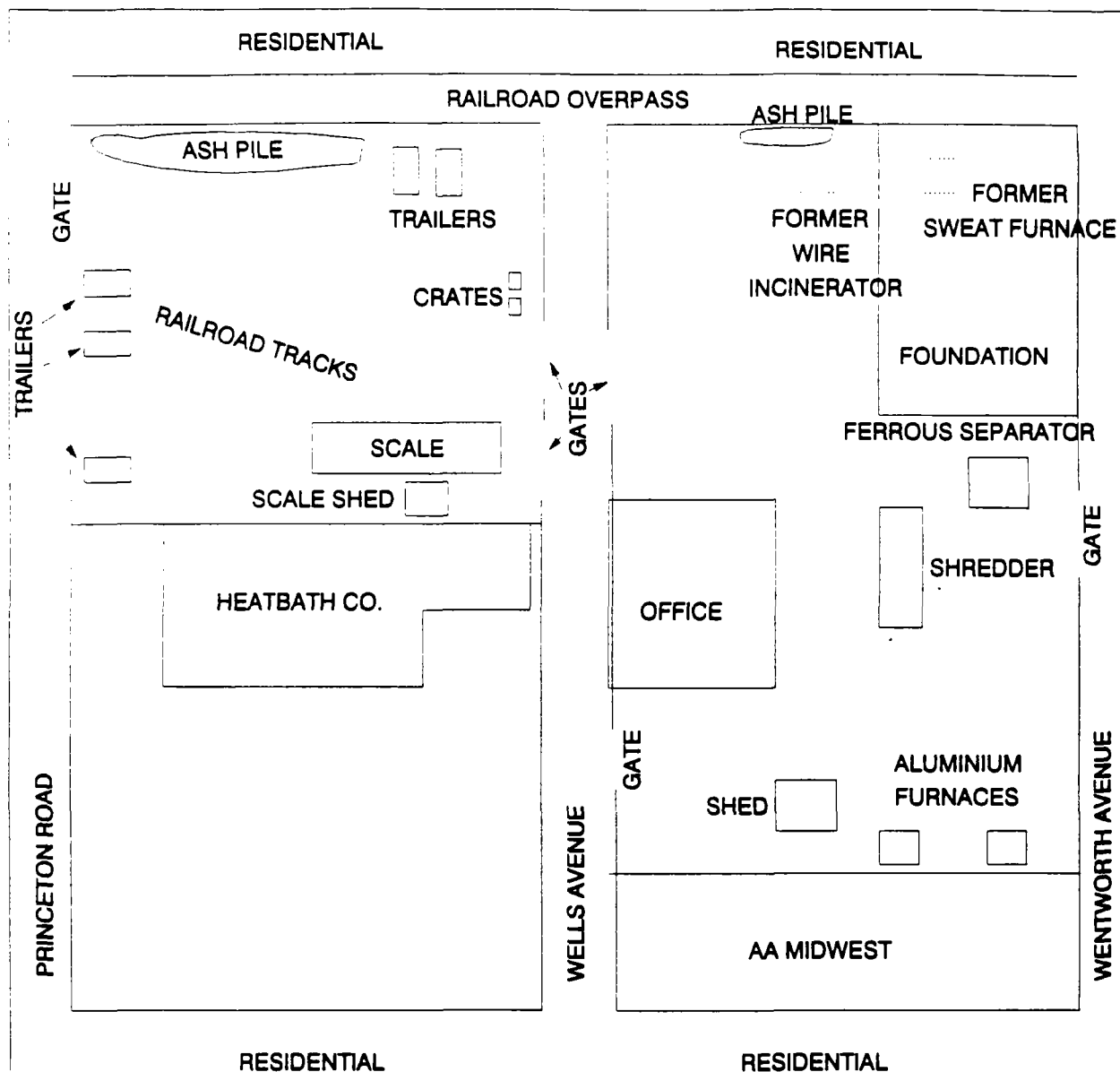
## **3.0 SITE BACKGROUND**

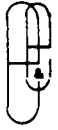
The property has been used for industrial purposes since 1895. A Sanborn Fire Insurance map, dated, 1895 indicates part of the east and west lots was owned by Weaver and Getz. It is unknown what business Weaver and Getz operated. Two other businesses owned parts of the east lot; W. B. Scace and Company (which loaded lime and cement) and Chas D. Pek and Company (which sold hay, grain, and feed). A Sanborn Fire Insurance map, dated, 1925, shows a Baker-Smith Coal Company operated a coal yard on the east lot. The west lot did not appear to be used by either Chicago Mfg. & Distribution Company (a machine shop) or Arthur M. Adler & Company, Oils located to the south.

The Standard Scrap Metal Company (SSMC) was started in 1928 by Sam Cohen and Sam Kanter at 4004 Wentworth Avenue. SSMC was involved in reclaiming aluminum and cooper and sold the reclaimed scrap metal to steel smelters and refiners. The facility contained 1 gas-fired boiler, 2 aluminum sweat furnaces, and a



 <p><b>ecology and environment, Inc.</b>  <b>Technical Assistance Team</b>  <b>Region V</b>          111 W. Jackson Blvd., Chicago, Ill. 60604</p>				 <p>QUADRANGLE LOCATION</p>	
TITLE		FIGURE #			
SITE LOCATION MAP		1			
SITE		SCALE			
SCRAP METAL		1:24,000			
CITY		STATE		TDD	
CHICAGO		ILLINOIS		TO5-9311-007	
SOURCE		DATE			
USGS TOPO ENGLEWOOD, IL, JACKSON PARK, IL		REVISED		1980, 1972	



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TITLE	FIGURE #
SITE FEATURES MAP	2
SITE	SCALE
SCRAP METAL	NOT TO SCALE
CITY	STATE
CHICAGO	ILLINOIS
SOURCE	TDD
ECOLOGY & ENVIRONMENT, INC.	TO5-9311-007
	DATE
	3-7-94
	REVISED



wire burning incinerator. Operations continued until 1972 when the company merged into Standard Scrap Metal Company, Incorporated (SSCMI). SSCMI continued operations at the site until 1987, when the company went bankrupt.

Phoenix Recycling, a metals reclamation business, began operations at the site about the same time of the SSCMI bankruptcy and continued operating the same type of business until 1989. The Sam Cohen and Sam and Benjamin Kanter Building Partnership owned Phoenix Recycling.

Chicago International Exporting Company (CIEC) began operations at the site in 1989 and continues to operate a metal recycling facility. CIEC is owned by Chicago International Export Company, Incorporated whose President is Steve Cohen.

The SM site has been investigated by the Illinois Environmental Protection Agency (IEPA) and U.S. EPA beginning in 1973. In 1973, personnel from IEPA inspected the site for compliance with Air Pollution Regulations. The inspection revealed that the facility did not have the proper air pollution permits to operate their incinerator or sweat furnaces. A suit (PCB 83-22) was filed against SSCMI for not possessing permits required by IEPA and the City of Chicago. The complaint stated that SSCMI could achieve compliance by installing afterburners on the sweat furnaces. The afterburners were not installed and permits were not applied for until 1984. A permit for the gas-fired boiler was applied for and approved on December 14, 1984.

On January 10, 1985, Illinois Pollution Board (IPB) continued the suit (PCB 83-22) against SSCMI for permit violations. IPB suit ordered SSCMI to:

Cease and desist from operations of its incinerator until the necessary operating permit is obtained from the IEPA:  
Cease and desist from operating either of its aluminum sweat furnaces until the necessary permits are obtained from the IEPA and permanently shut down the inactive aluminum sweat furnace by January 21, 1985.

Install temperature gauges on each afterburner with an interlock that prevents operation unless the afterburner temperature is at least 1400 degrees Fahrenheit, and take all necessary steps to ensure adequate pre-heating of each afterburner prior to charging. These requirements are to be made conditions of the operating permits issued by the IEPA;

Within 90 days of the date of this order pay a penalty of \$30,000 for the violation of the Act and Regulations as described in this opinion.

On February 14, 1984, IEPA investigated a report from an employee of Heatbath Corporation, the plant south of the west lot, that workers at the facility periodically dumped transformer oil on the ground and igniting it. This practice was to have taken place from 1977 to 1981. On one occasion the roof of the Heatbath Corporation caught fire and the Chicago Fire Department extinguished the fire.

IEPA collected 2 soil samples, one sample from the west lot and one from near a garage located at 3949 South Wells Avenue. A complaint from the resident at 3949 South Wells Avenue stated oil from SM Site would flow off-site into her yard. Sampling results indicated Polychlorinated biphenyls (PCBs) at 3.9 parts per million (ppm) at the residence and 1,300 ppm from the west lot. The IEPA requested that the U.S. EPA conduct a PCB inspection at the site.

On March 30, 1984, U.S. EPA's Toxic Substance Office conducted a inspection of SM facility to document their handling, storage, and disposal practices. During the inspection 6 composite soil samples and 1 wipe sample were collected from the west lot and a residence at 3949 South Wells Avenue. Analytical results from the samples indicated PCB levels of up to 2,095 ppm but no detectable amounts at the residence. The U.S. EPA filed a complaint against SSMCI for violating regulations pertaining to the disposal of PCBs and a civil penalty of \$25,000 was levied for improper disposal of PCBs.

On June 18, 1985, the Roy F. Weston TAT collected 4 soil samples and 2 wipe samples (east lot) at the SM site. The analytical results indicated PCBs levels up to 336 ppm in three samples and some dioxin isomers in 4 samples.

On October 29, 1985, an amended complaint by U.S. EPA was filed against SSMCI after the June 18, 1985 inspection. The amended complaint levied a \$30,000 penalty for violations of Section 16(a) of the Toxic Substance Control Act (TSCA). In February 1987, SSMCI appealed the decision and the complaint was dismissed because the U. S. EPA did not prove that the PCB-contaminated oil had been accepted at the site after 1978. However, the U.S. EPA appealed the dismissal and the decision was reversed and the \$30,000 fine was levied against the facility. SSMCI filed for bankruptcy, the fine was not collected and the U.S. EPA Enforcement Branch closed the case. In 1989, metal recycling operations continued on-site, when CIEC began operation at the site.

In 1990, a former railroad employee had a telephone interview with Tom Crause of the IEPA. The former railroad employee indicated that workers at the facility cut up and disposed of many electrical transformers during his 30 years of working for the railroad. Based on this information, on August 27, 1990,

SSMC was placed on the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS).

On August 29, 1991, IEPA personnel conducted an off-site reconnaissance inspection of the SM facility. IEPA observed piles of scrap metal around the site. No air admission were observed at the site, the boiler appeared to be not in operation. At the east lot, the north sweat furnace had been demolished and was left as a pile of debris. A number of drums, which appeared to be empty, were observed near the north side of the office building. No leakage was observed from the drums or stressed vegetation on the lot. At the west lot, the gates were open and was empty except for 3 semi-trailers. The IEPA prepared a Preliminary Assessment (PA) for Standard Scrap Metal site (also called Standard Metal) on September 30, 1991.

On September 22, 1992, the IEPA was tasked by the U.S. EPA Region V to conduct a CERCLIS Screening Site Inspection (SSI) of the SM site. The SSI was conducted on November 4 and 5, 1992 and consisted of the collection of 12 soil samples. The analytical results from on-site soil sampling indicated PCBs up to 670,000 Micrograms per kilogram (ug/kg = parts per billion (ppb)). The PCBs can be directly associated with past activities at the site as reported by the Heatbath employee and railroad employee.

#### **4.0 SITE ASSESSMENT**

On February 22, 1994, TAT members John Nordine and Yvette Anderson met with U.S. EPA On-Scene-Coordinator (OSC) Steve Faryan at the SM site. The SM site is currently called Chicago International Export Company. Access to the site was granted during an interview with CIEC President, Steve Cohn and Secretary Treasure, Buddy Cohn. A site safety meeting was held and the potential hazards of the site were discussed. A site reconnaissance of the SM Site was completed, which included a tour of the facility (see Appendix A for Site Photo Log).

A railroad spur cuts across both lots diagonally. A railroad overpass delineates the north property line for both lots (see Figure 2, Site Features map). A 8-foot fence topped with 3 strands of barbed wire surround both lots.

The east lot has an office building, a small receiving shed, 2 aluminum furnaces, a ferrous metal sorter, a shredder, a ash pile, and large piles of scrap metal located at various points throughout the property. According to Buddy Cohn, the entire east lot has been paved with either concrete or asphalt. The TAT could not verify that the east lot had been paved due to debris and piles of scrap metal covering the lot. A debris and ash pile was located in the area where the wire incinerator was formerly located. The sweat furnaces have been demolished. A foundation

of a building was located in the northeast corner of the east lot.

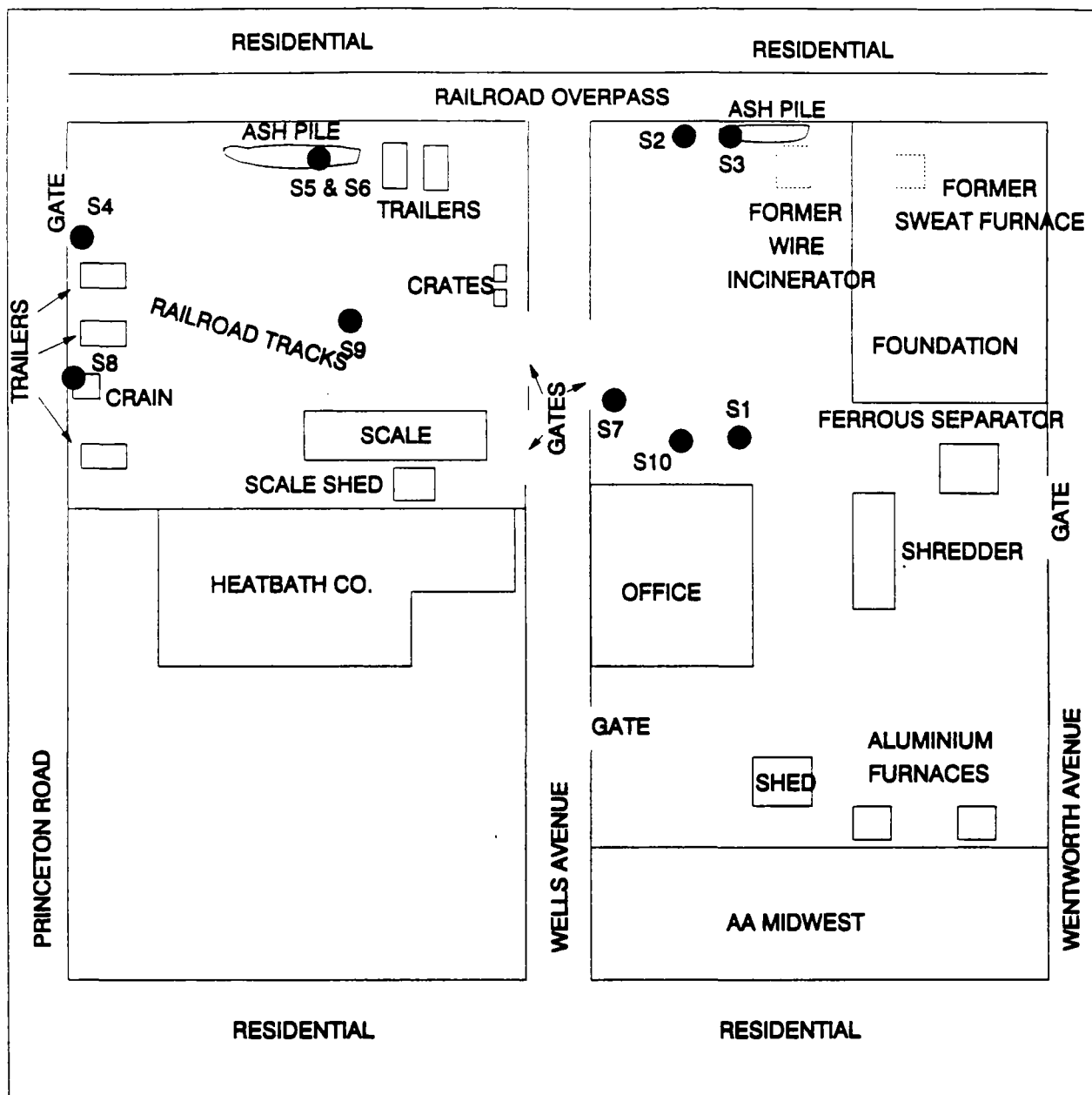
A small scale house is located on the west lot along the south side which is used to weigh incoming trucks loaded with scrap metal. A crane and 3 semi-trailers were parked along the west fence line of the west lot. Located along the north property line from west to east were a crane boom, a ash pile with tires placed on top, a striped out car, and 2 semi-trailers. Three large crates were located along the east fence line of the west lot.


During the reconnaissance CIEC workers were observed to burn a pile of cardboard material at the east lot and burn unknown materials in a 55-gallon drum at the west lot. Later CIEC workers put out the cardboard fire with water from a hose. The materials burned in the 55-gallon drum gave off a black smoke that was irritating to the eyes, nose, and throat. When the metal shredder was in operation a dust cloud could be observed. The metal shredder was turned off while TAT was in the area. Oil stains were observed on the ground at both lots. A motor had been cut open and oil was observed flowing from it at the east lot.

To characterize the possible hazardous substances on-site, the TAT collected ten soil samples including a duplicate sample and a matrix spike/matrix spike duplicate (MS/MSD) sample (see Figure 3 Sample Location Map). All soil samples were collected from 1 to 3 inches in depth with a shovel and a trowel.

All soil samples collected on-site were collected in Level D personal protection. Sampling gloves were changed before each sample was collected. Sampling equipment was decontaminated after each use, using a alconox and distilled water wash solution and triple rinsed with distilled water. All personal protective equipment was decontaminated as above and disposed of properly.

Soil samples S1, S2, S3, S7, and S10 were collected from the east lot. Soil sample S1 was collected from an area approximately 15 north of the northeast corner of the office. Soil Sample S2 was collected near a tree along the north property line west of the former wire incinerator. S3 was collected from a ash pile approximately 20 feet east of sample S2. An white crystalline substance was noted in the ash material and two dead rats were noted on top of the ash pile. Sample S7 was collected 25 feet north and 25 feet east of the northwest corner of the office building near the railroad tracks. Soil sample S10 was collected approximately 10 feet north and 35 feet east of the northwest corner of the office building.



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TITLE	FIGURE #
SAMPLE LOCATION MAP	3
SITE	SCALE
SCRAP METAL	NOT TO SCALE
CITY	STATE
CHICAGO	ILLINOIS
SOURCE	DATE
ECOLOGY AND ENVIRONMENT, INC.	2-22-94
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# LEGEND

S1 ● SOIL SAMPLE





Soil samples S4, S5, S6, S8, and S9 were collected from the west lot. Soil sample S4 was collected 3 feet west of the northwest gate next to the railroad tracks. S4 was also the Matrix Spike/Matrix Spike Duplicate (MS/MSD). Soil sample S5 and S6, a duplicate sample, were collected from the ash pile along the north property line. S8 was collected by the crane 30 feet north and 3 feet east of the northwest corner of the Heatbath Company building. Soil sample S9 was collected approximately from the middle of the west lot by the railroad tracks.

Soil samples were delivered to and analyzed by Twin City Testing Corporation, 737 Pelham Boulevard, St. Paul, Minnesota 55114. The soil samples were analyzed for semi volatile organics, total Resources Conservation Recovery Act (RCRA) 10 metals, Toxicity Characteristic Leaching Procedure (TCLP) for 8 metals, PCBs, and dioxin (soil samples S1, S2, S3, and S8).

## **5.0 ANALYTICAL RESULTS**

Results of the TAT collected samples revealed the presence of U. S. EPA Target Compound List (TCL) volatile compounds and base neutral acids; Total RCRA 10 metals; Toxicity Characteristic Leaching Procedure (TCLP) 8 metals; PCBs; and Dioxin. See Appendix B for data quality assurance review. See Tables 1 through 4 for analytical results.

## **6.0 DISCUSSION OF POTENTIAL THREATS**

Conditions at the Scrap Metal Site that may warrant a removal action, as set forth in paragraph (b) (2) of Section 300.415 of the National Contingency Plan (NCP), include:

1. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants; and
2. high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

### **6.1 Potential Exposure To Hazardous Substances**

Site investigations and analytical data obtained by IEPA and the TAT have identified soil containing materials that possess characteristics of hazardous wastes, as defined by RCRA at the SM site. TCLP metals, cadmium at 1.3 mg/l and lead at 71 mg/l, were detected in on-site soils. On-site soils contain heavy metals that were above the RCRA limits for cadmium and lead (1 and 5 mg/L, respectively) which are listed waste D006 and D008, respectively. Total PCBs were detected in on-site soils ranging from 37,100 to 2,000,000

TABLE 1  
ANALYTICAL DATA FOR TOTAL METALS  
AT THE SCRAP METAL SITE  
CHICAGO, ILLINOIS  
units = mg/Kg

SAMPLE NUMBER PARAMETER	S1	S2	S3	S4	S4*	S5	S6**	S7	S8	S9	S10
ARSENIC	36	56	22	36	39	35	34	43	38	13	50
BARIUM	410	1,400	450	160	130	540	550	630	390	190	1,300
CADMIUM	49	140	68	19	20	64	57	42	69	20	47
CHROMIUM	97	200	130	300	350	1,400	1,700	81	290	48	92
COPPER	20,000	15,000	38,000	1,600	1,600	15,000	8,500	7,400	10,000	7,400	6,400
LEAD	2,600	5,900	5,400	870	900	5,700	3,500	2,000	2,400	3,200	5,700
MERCURY	16	25	3.3	5.9	6.1	10	13	12	20	7.1	5.2
SELENIUM	21	82	ND	ND	5.5	10	11	13	ND	6.5	ND
SILVER	13	21	67	2.1	1.9	39	23	9.7	4.3	9.6	2.2
ZINC	9,000	6,500	3,600	1,200	1,100	5,400	4,600	4,800	4,200	2,600	9,400

\* = Sample S4 is a Matrix Spike/Matrix Spike Duplicate sample.

\*\* = Sample S6 is a duplicate sample of S5.

ND = Non detect

NOTE: Correction made to units (from ppb to mg/Kg) per laboratory data sheets (12/2/94)

TABLE 2  
ANALYTICAL DATA FOR TCLP METALS  
AT THE SCRAP METAL SITE  
CHICAGO, ILLINOIS  
units = mg/l

SAMPLE NUMBER PARAMETER	S1	S2	S3	S4	S4*	S5	S6**	S7	S8	S9	S10	REGUL- ATORY LEVEL
ARSENIC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0
BARIUM	1.5	2.8	2.7	1.1	1.1	4.8	2.7	1.3	1.5	1.6	2.0	100
CADMIUM	0.87	1.3	0.11	0.23	0.22	0.91	0.66	1.2	0.85	0.48	0.69	1.0
CHROMIUM	ND	ND	ND	0.01	ND	ND	ND	ND	0.012	0.015	ND	5.0
LEAD	7.5	16	0.69	8.2	8.1	45	4.3	7.4	5.3	71	32	5.0
MERCURY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2
SELENIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0
SILVER	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0

\* = Sample S4 is a Matrix Spike/Matrix Spike Duplicate sample.

\*\* = Sample S6 is a duplicate sample of S5.

ND = Non detected

NOTE: Corrections made to metal values that are in bold per laboratory data sheets  
(12/2/94)

**TABLE 3**  
**ANALYTICAL DATA FOR PCBs**  
**AT THE SCRAP METAL SITE**  
**CHICAGO, ILLINOIS**  
unit = ppb

SAMPLE NUMBER	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
PARAMETER										
PCB 1016	77,000	ND	4,100	73,000	140,000	190,000	55,000	100,000	49,000	15,000
PCB 1254	45,000	ND	18,000	170,000	510,000	300,000	42,000	550,000	83,000	24,000
PCB 1260	21,000	2,000,000	15,000	92,000	210,000	200,000	39,000	80,000	32,000	22,000
TOTAL PCBs	143,000	2,000,000	37,100	335,000	1,130,000	690,000	136,000	730,000	164,000	61,000

ND = Non Detect

**TABLE 4 ANALYTICAL DATA FOR DIOXINS AT THE  
SCRAP METAL SITE CHICAGO, ILLINOIS**

Sample ID# Analyte	S1 μg/kg	S2 μg/kg	S3 μg/kg	S8 μg/kg	BLANK μg/kg
TOTAL 2378-TCDD EQUIVALENCE	0.265	4.004	1.207	0.36	0
2378-TCDF	0.22	ND	1.7*	ND	ND
TOTAL TCDF	1.5	17	9.4	1.9	ND
2378-TCDD	ND	ND	ND	ND	ND
TOTAL TCDD	0.034	0.58	0.13	0.15	ND
12378-PeCDF	0.094	4.4	0.55	ND	ND
23478-PeCDF	0.26	6.3	1.3	0.22	ND
TOTAL PeCDF	1.3	42	7.6	3.3	ND
12378-PeCDD	ND	ND	ND	ND	ND
TOTAL PeCDD	ND	ND	ND	ND	ND
123478-HxCDF	0.25	ND	0.81	0.5	ND
123678-HxCDF	0.16	ND	0.64	ND	ND
234678-HxCDF	0.23	2.7	0.99	0.36	0.039
123789-HxCDF	0.095	0.890	0.22	0.17	ND
TOTAL HxCDF	2	15	7.7	2.7	0.039
123478-HxCDD	0.021*	ND	0.1	0.029	ND
123678-HxCDD	0.070*	0.25	0.17	0.670	ND
123789-HxCDD	0.033*	0.13	0.12	0.19	ND
TOTAL HxCDD	0.24	0.38	1.1	1.8	ND
1234678-HCDF	0.9	12	3	1.1	ND
1234789-HpCDF	0.12	3.6	0.33	0.24	ND
TOTAL HpCDF	1.5	16	4.5	1.3	ND
1234678-HpCDD	0.73	2.9	1.5	2.8	0.0023
TOTAL HpCDD	1.4	5.9	2.9	5.7	0.0044
OCDF	0.77	30	1.6	1.6	ND
OCCD	4.3	22	3.9	51	0.021

ND - Non detect

\* - Value may include contributions from other TCDF isomers.

ppb. The PCBs can be directly associated with past activities at the site as reported by the Heatbath employee and former railroad employee. On-site soil contain dioxins that were greater than 1 ug/kg (2,3,7,8-TCDD equivalence) S2 4.004 ug/kg and S3 1.207 ug/kg. CIEC workers continue work on-site where they have the potential to come in contact with hazardous substances.

## 6.2 Migration of Contaminants

On-site soils contains heavy metals that were above the RCRA limits for cadmium and lead (1 and 5 mg/L, respectively) which are listed wastes D006 and D008, respectively. Total PCBs were detected in on-site soils ranging from 37,100 to 2,000,000 ppb. On-site soils contain dioxins that were greater than 1 ug/kg (2,3,7,8-TCDD equivalence) in samples S2 4.004 ug/kg and S3 1.207 ug/kg. The Agency for Toxic Substances and Disease Registry (ATSDR) considers 1 ug/kg of dioxin in soil to be a level of concern in residential areas. The migration of contaminants from the facility is possible due to piles by airborne dusts or storm run-off which could effect on-site workers and nearby residential areas.

## 7.0 SUMMARY

The site assessment documented the existence of hazardous substances at the Scrap Metal site. These substances were detected in samples of on-site soils which were found to contain materials that possess characteristics of hazardous wastes, as defined by RCRA. The SM site is an active metal reclamation facility. Conditions at the SM site may pose risks to the business employees on-site and to nearby residential areas.

### 7.1 RCMS 4.0 COST PROJECTION

Removal cost estimates for off-site disposal were projected using the U.S. EPA Removal Cost Management System (RCMS) program. Cost estimates to mitigate threats due to on-site contaminated materials contained in the soil are based on the following assumptions:

1. There is approximately 4,500 cubic yards contaminated soils on-site. This estimated amount was generated assuming that the 3-acre site could be contaminated to a depth of at least 1 feet. This estimate does not include the soils underneath the concrete in east lot.
2. Soil containing PCBs at concentrations greater than 50 ppm will be disposed of at a TSCA approved landfill;

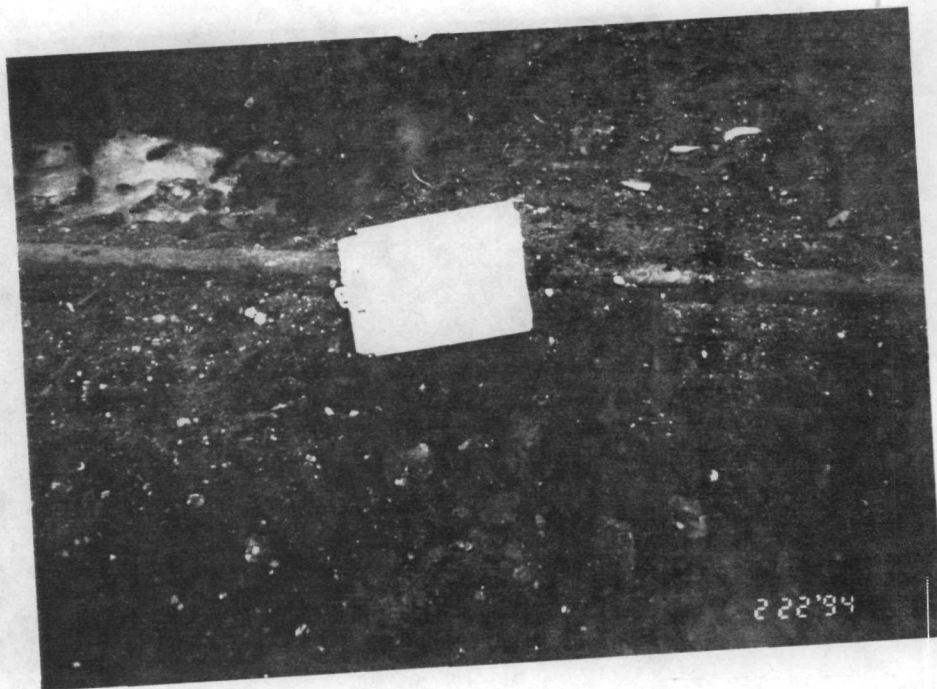
3. Soil containing dioxin at concentrations greater than 1 ug/kg will be disposed of at a TSCA approved landfill;
4. Soil exhibiting TCLP cadmium and lead concentrations greater than 1 and 5 mg/l respectively will be stabilized either on-site or off-site and transported to an appropriate and RCRA permitted off-site landfill. If the soil also exhibits a PCB concentration greater than 50 mg/kg prior stabilization, the soil will be stabilized and disposed of at a TSCA approved landfill.

The cost estimates for the cleanup are based on 90 12-hour days by Emergency Response Cleanup Support (ERCS) contractor; Riedel Environmental Services, and is projected to cost \$1,696,050. See Appendix C for the RCMS cost estimate.

APPENDIX A  
PHOTO LOG

2 2

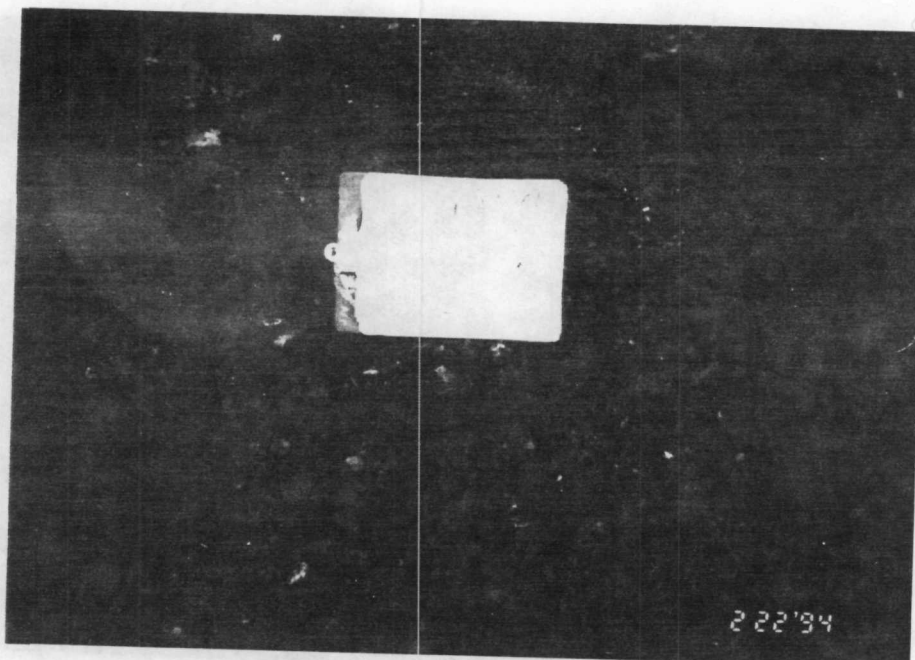




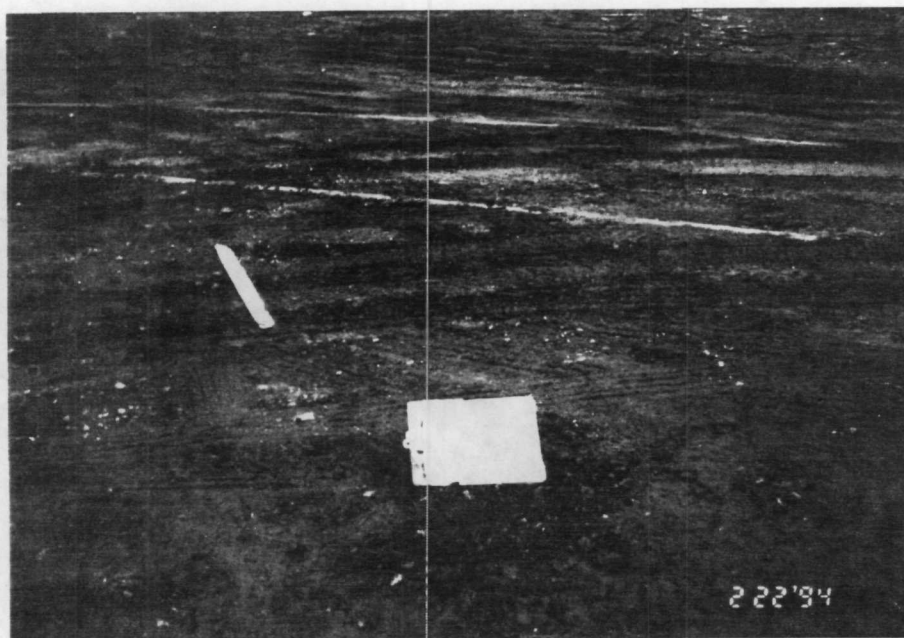
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1225  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S7 COLLECTED 25'N & 25'E OF THE  
 NW CORNER OF THE OFFICE



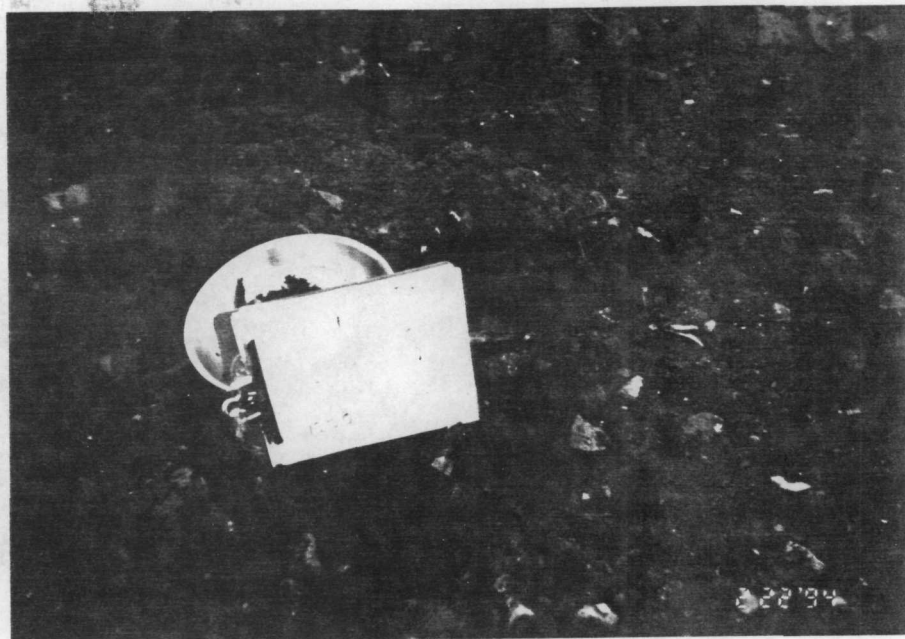
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1325  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S9 COLLECTED FROM THE MIDDLE OF  
 THE WEST LOT BY RAILROAD TRACKS



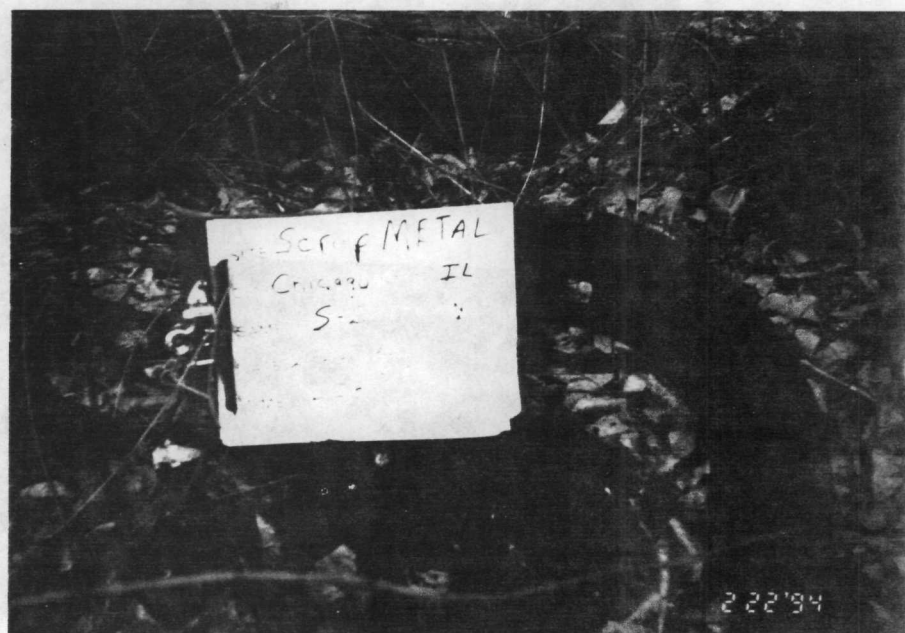
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1325  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S9 COLLECTED FROM THE MIDDLE OF  
 THE WEST LOT BY RAILROAD TRACKS



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1250  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S8 COLLECTED NEAR CRAIN ALONG  
 WEST PROPERTY LINE WEST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1200  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S1 EAST LOT, 20' NORTH OF THE  
 OFFICES NE CORNER.

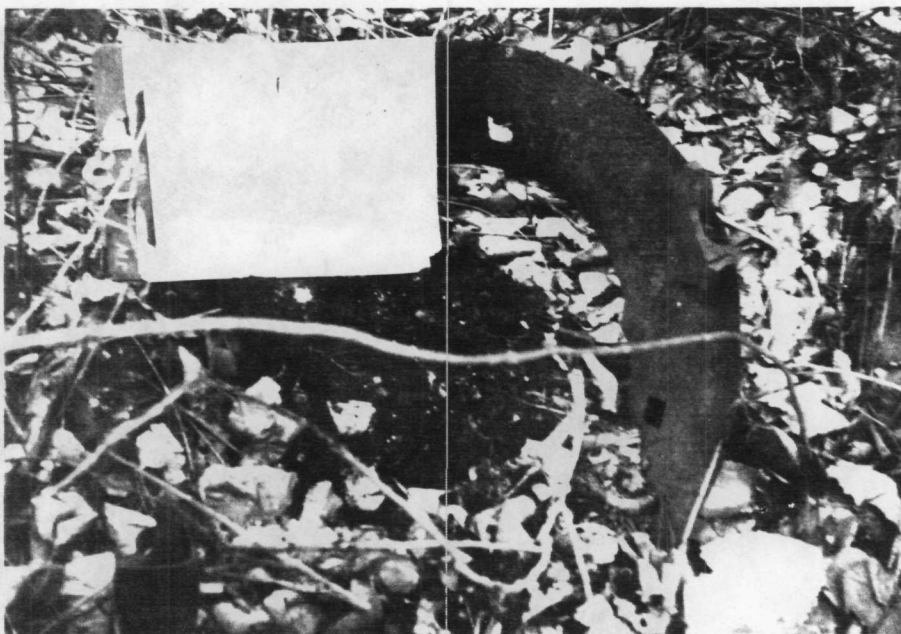


SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1203  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S2 EAST LOT, WEST OF THE FORMER  
 WIRE INCINERATOR





SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1203  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT, S2 LOCATED ALONG  
 RAILROAD OVERPASS



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1205  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT SOIL SAMPLE S2  
 LOCATION



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1225  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: OIL STAINED AREA WERE S10 WAS  
 COLLECTED N SIDE OF THE OFFICE



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1225  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: OIL STAINED AREA WERE S10 WAS  
 COLLECTED N SIDE OF THE OFFICE



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NORTH SIDE OF THE OFFICE  
 BUILDING EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NORTH SIDE OF THE OFFICE  
 BUILDING EAST LOT





SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: FENCE ALONG THE WEST SIDE OF  
 THE EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NOTE FENCE ALONG WEST SIDE OF  
 THE OFFICE EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: WEST SIDE OF THE OFFICE NOTE  
 FENCE



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1215  
 DIRECTION: NORTHWEST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NORTHWEST AREA OF EAST LOT

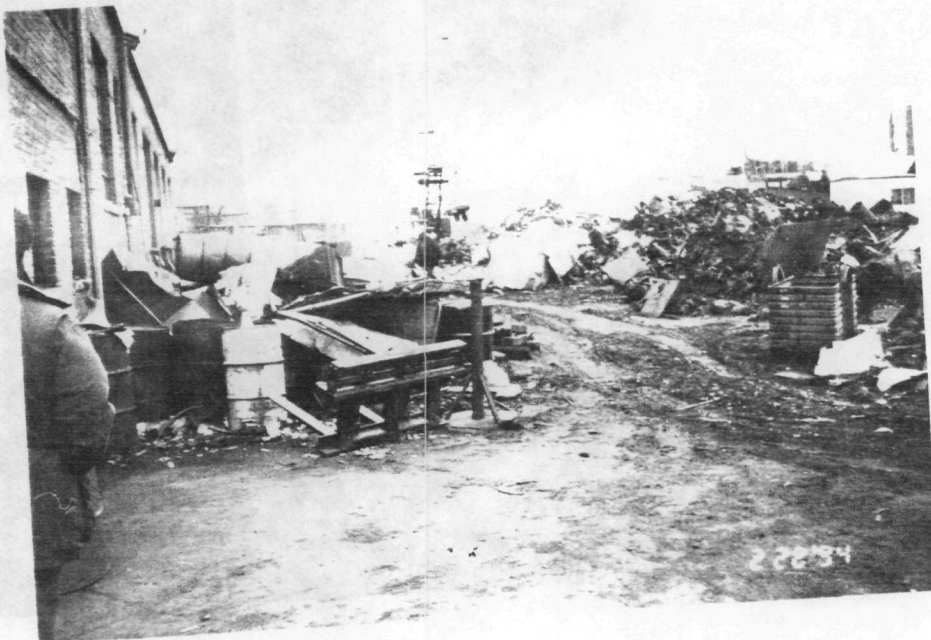




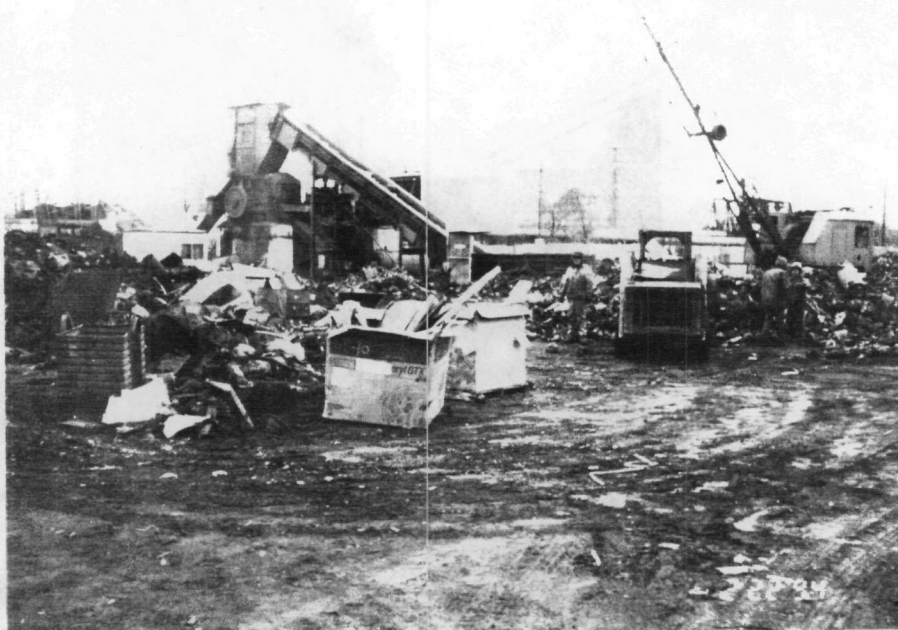
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1230  
 DIRECTION: EAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT CARDBOARD FIRE BY EAST  
 SIDE OF THE OFFICE BUILDING



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1210  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NOTE SMOKE FROM CARDBOARD FIRE  
 LOCATED BY THE EAST LOT OFFICE



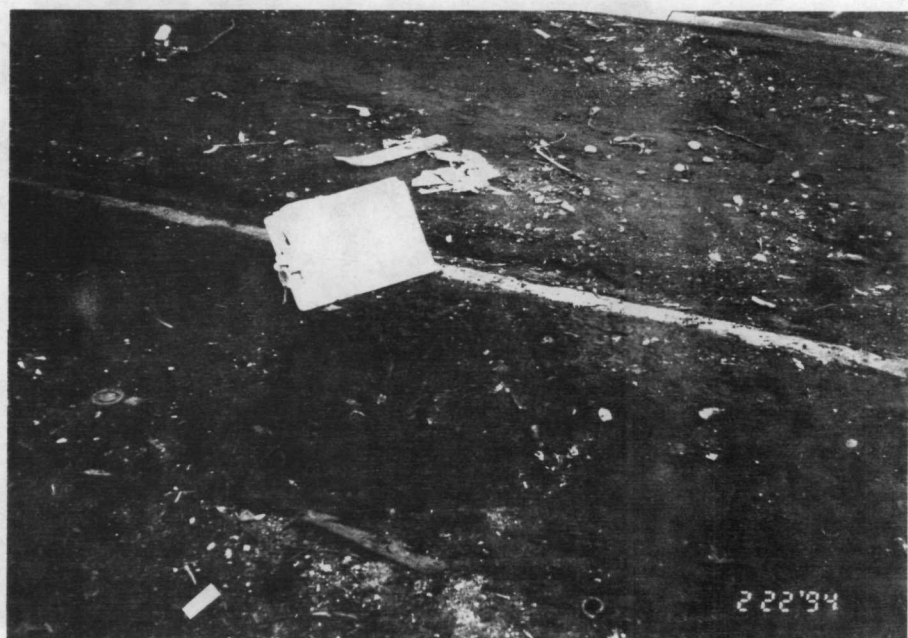
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST SIDE OF THE OFFICE  
 BUILDING EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: NORTHEAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: METAL SHREDDER NOTE DUST CLOUDS  
 EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1215  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: SOIL SAMPLE S3 FROM ASH PILE IN  
 THE EAST LOT, NOTE THE DEAD RATS



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1305  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S4 COLLECTED 3' EAST OF THE  
 NORTHWEST GATE, WEST LOT

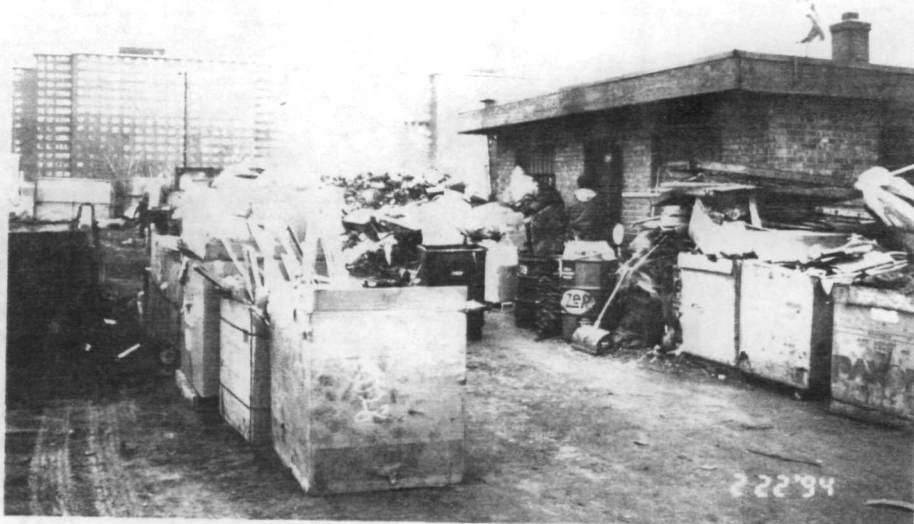




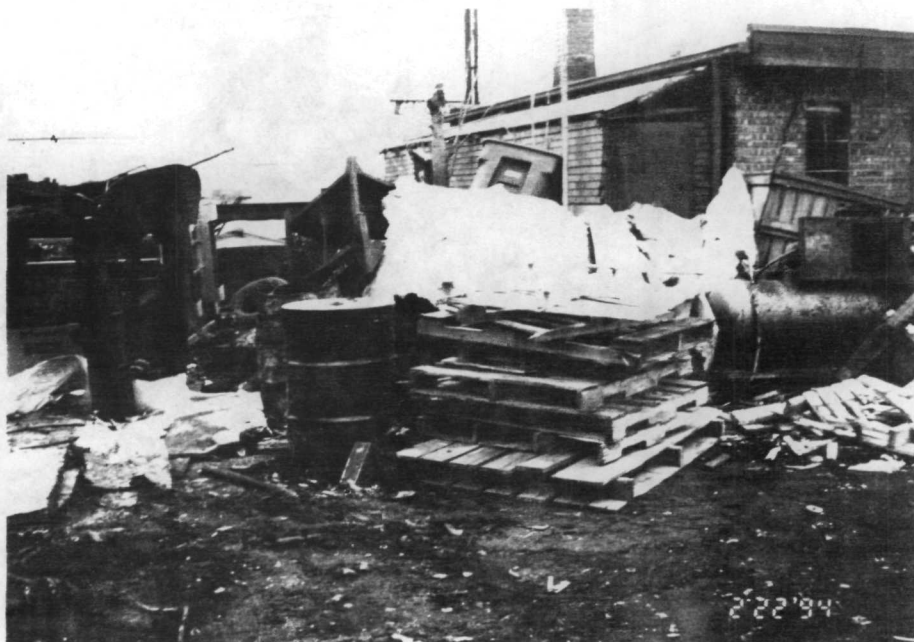
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1305  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S4 COLLECTED 3' EAST OF THE  
 NORTHWEST GATE, WEST LOT



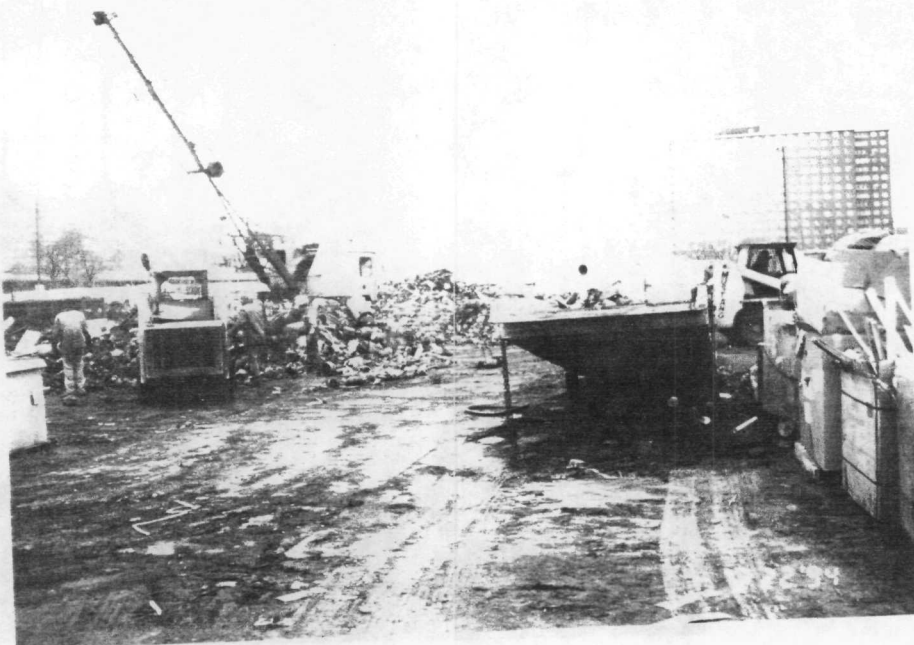
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1310  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: S5 & S6 ASH PILE WEST LOT ALONG  
 NORTH PROPERTY LINE



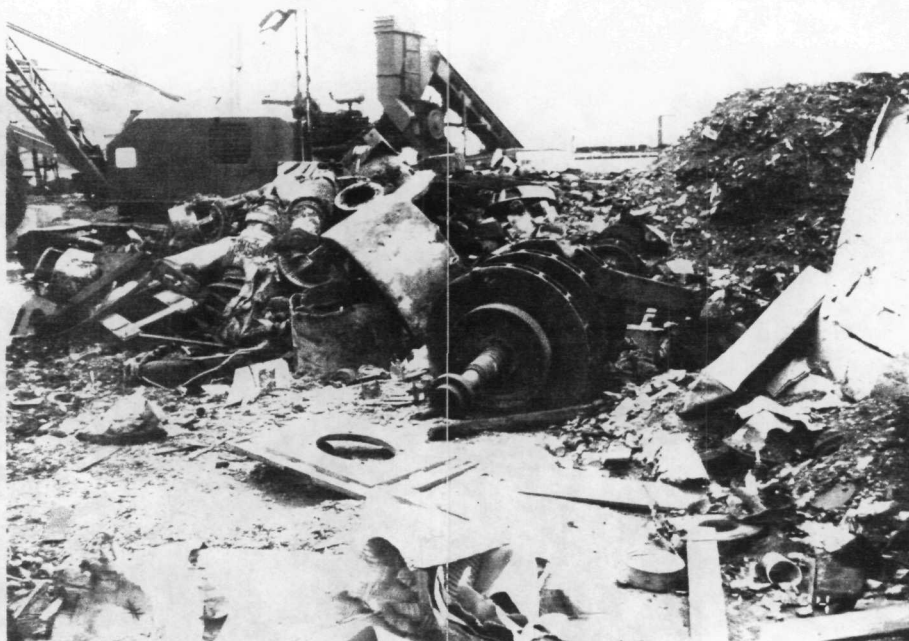
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1230  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT RECEIVING SHED FOR  
 RECYCLE MATERIALS



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1230  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: DRUM NEAR RECEIVING SHED  
 CONTENTS KNOWN

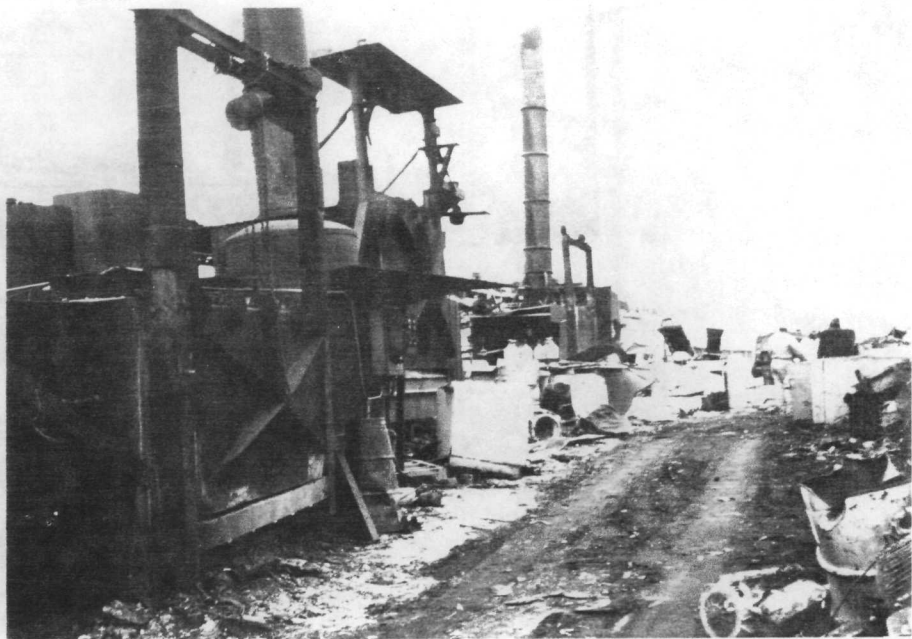


SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: EAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: SCRAP METAL PILES EAST LOT NOTE  
 APARTMENTS IN THE BACKGROUND

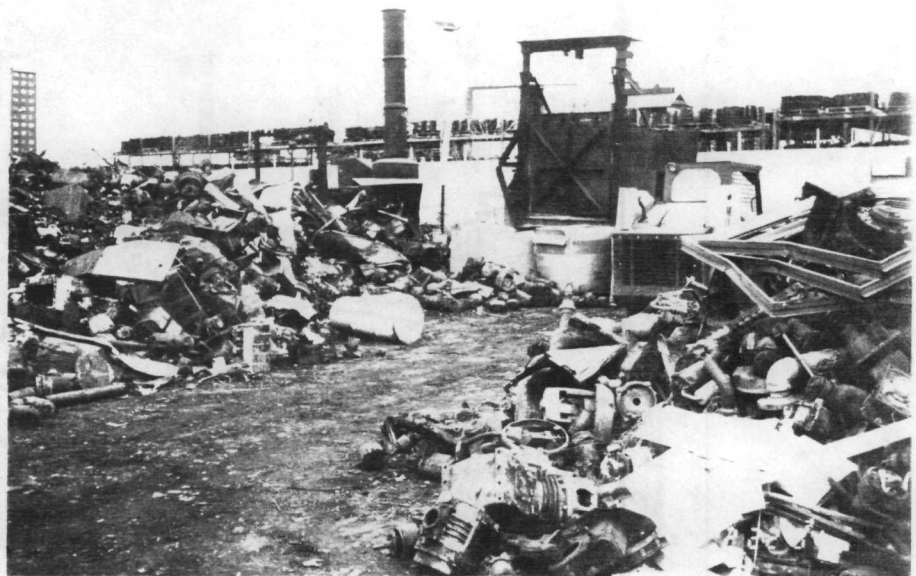


SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1205  
 DIRECTION: EAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT SCRAP METAL PILES





SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1230  
 DIRECTION: WEST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: ALUMINUM FURNACES ALONG SOUTH  
 PROPERTY LINE EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: SOUTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: SCRAP METAL PILES AND ALUMINUM  
 FURNACES IN THE EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: SOUTHEAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: SOUTH PART OF THE EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: EAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: RECYCLING SHED IN THE EAST LOT





SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1250  
 DIRECTION: NORTHEAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NORTHEAST PART OF THE WEST LOT



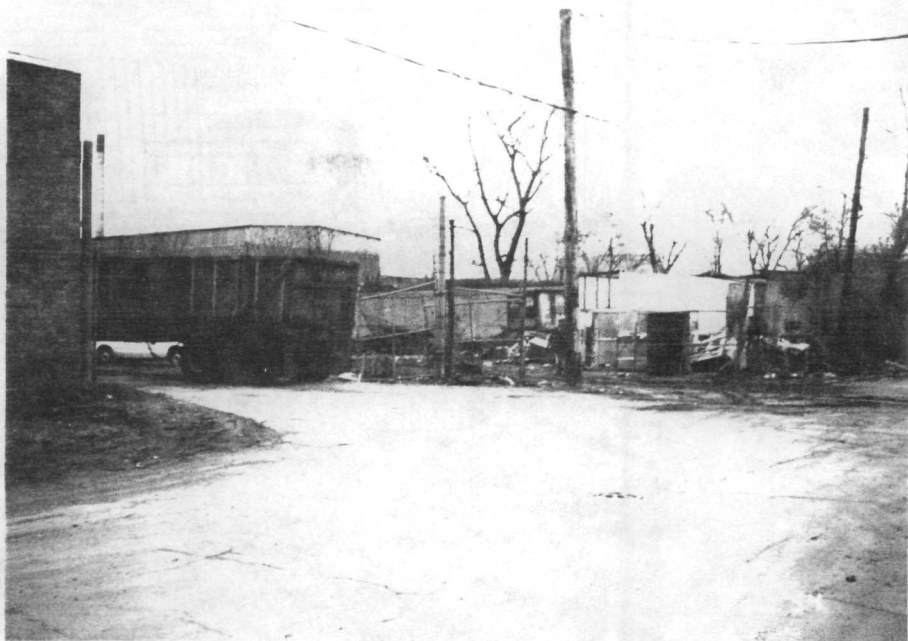
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1250  
 DIRECTION: NORTHEAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NORTHEAST PART OF THE WEST LOT



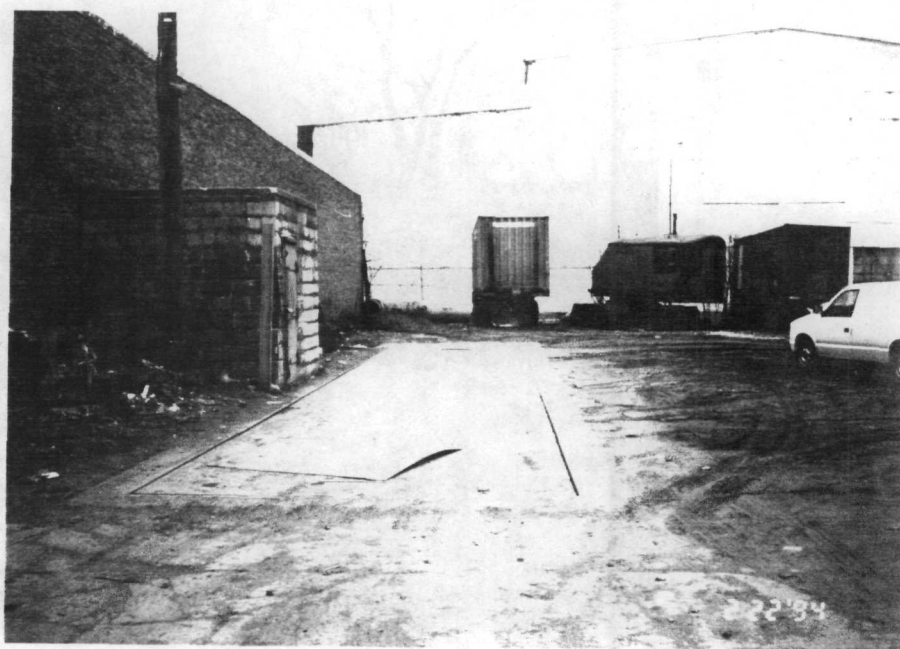
SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1250  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: CRANE BOOM, ASH PILE, AND TIRES  
 ALONG NORTH SIDE OF WEST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1305  
 DIRECTION: EAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: BURN DRUM WEST LOT, NOTE BURNED  
 WIRE AT BASE OF THE DRUM



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: NORTHWEST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST SIDE OF THE WEST LOT, NOTE  
 FENCE AND GATES



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1325  
 DIRECTION: WEST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: SCALE SHED AND TRUCK SCALE IN  
 THE WEST LOT





SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1300  
 DIRECTION: SOUTHWEST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: SOUTHWEST PART OF THE WEST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1325  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NORTHSIDE OF WEST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1330  
 DIRECTION: NORTHEAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT SCRAP METAL PILES AND  
 EMPTY DRUMS



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1345  
 DIRECTION: EAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: FERROUS SORTER AND THE METAL  
 SHREDDER IN THE EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1225  
 DIRECTION: WEST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: METAL SHREDDER AT THE EAST LOT



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1330  
 DIRECTION: EAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: NOTE APARTMENTS IN BACK OF  
 SHREDDER & FERROUS SORTER





SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1201  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT RAILROAD OVERPASS  
 NORTH BOUNDARY OF SITE.



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1202  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT PILES OF SCRAP METAL



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1202  
 DIRECTION: NORTH  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT, PILES OF SCRAP METAL  
 BY RAILROAD OVERPASS



SITE: SCRAP METAL  
 DATE: 2-22-94  
 TIME: 1205  
 DIRECTION: NORTHEAST  
 PHOTOGRAPHER: JOHN NORDINE  
 DESCR: EAST LOT SCRAP METAL PILES IN  
 THE NORTHEAST AREA



APPENDIX B  
DATA QUALITY ASSURANCE REVIEW



# ecology and environment, inc.

International Specialists in the Environment

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Chicago, Illinois 60604

Tel: (312) 663-9415, Fax: (312) 663-0791

## MEMORANDUM

DATE: May 3, 1994

TO: John Nordine, Project Manager, E&E, Chicago, IL

FROM: Nabil Fayoumi, TAT-Chemist, E&E, Chicago, IL *NF*

THRU: David Hendren, TAT-Chemist, E&E, Chicago, IL

SUBJ: Polychlorinated Biphenyl Data Quality Assurance Review, Scrap Metal Site, Chicago, Cook County, Illinois.

REF: Analytical TDD: T059402807      Project TDD: T059402007  
Analytical PAN: EIL0831AAA      Project PAN: EIL0831SAA

The data quality assurance review of 10 soil samples collected from the Scrap Metal Site in Chicago, Illinois has been completed. Analysis for Polychlorinated Biphenyls (PCBs) was performed by Twin City Testing located in St. Paul, Minnesota, Illinois in accordance with U.S. EPA Method SW-846-8080.

The samples were numbered as following:

<u>TAT Sample #</u>	<u>Corresponding to -&gt;</u>	<u>Laboratory Sample #</u>
S-1		15270
S-2		15277
S-3		15278
S-4		15279
S-5		15283
S-6		15287
S-7		15289
S-8		15290
S-9		15291
S-10		15292

### Data Qualifications:

#### **I Sample Holding Time: Acceptable**

The samples were collected on 2/22/94, extracted on 3/1/94, and analyzed on 3/6/94, and 3/7/94. The holding time criteria of 14 days for soil from collection to extraction was satisfied. The analysis of the samples was completed within the 40 day holding time requirement after extraction.

## **II Instrument Performance: Acceptable**

The quality control criteria established for the surrogate retention time shift of less than 0.3% were acceptable. Peak resolution was adequate.

## **III Calibration: Qualified**

### **A. Initial Calibration:**

A 5-point calibration check was performed prior to sample analysis. The Relative Standard Deviations (RSDs) of all calibration factors for all Aroclors did not meet the quality control criteria of less than or equal to 10% RSD except 1260 on the DB-608 column, therefore; positive results were flagged (J) as estimated.

### **B. Continuing Calibration:**

The percent difference (%D) requirements of less than 15% were acceptable for all data.

## **IV Method Blanks: Acceptable**

A method blank was analyzed with the samples. No contaminants were detected above the instrument detection limit.

## **V Matrix Spike/Matrix Spike Duplicate: Acceptable**

### **Spike Sample Analysis:**

All Matrix Spike/Matrix Spike Duplicate recoveries were diluted out due to high level of PCBs in the samples. No action was necessary.

## **VI Compound Identification and Quantitation: Acceptable**

All reported Retention Times were within the allowed RT windows. Positive results were confirmed using dual column analysis. The laboratory states in the narrative that because of the complexity of the Aroclor patterns present, it is possible that several Aroclors (PCB 1232 and PCB 1242) could be misidentified as PCB 1016.

## **VII Surrogate Recovery: Acceptable**

The surrogates were diluted out due to high level of PCBs in the samples. No action was necessary.

## **VIII Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality control Guidance For Removal Activities" (OSWER Directive 9360.4-01, April 1990).

Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

#### Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the were less than the contract required detection limits or quality control criteria were not met.

**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in  $\mu\text{g/Kg}$  which is equal to parts-per-billion)

**Client ID:** S-1

**TCT ID:** 15270

---

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	77,000	7,800
PCB 1221	ND	7,800
PCB 1232	ND	7,800
PCB 1242	ND	7,800
PCB 1248	ND	7,800
PCB 1254	45,000	7,800
PCB 1260	21,000	7,800
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

**Date Extracted:** 3/1/94

**Date Analyzed:** 3/7/94

---

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

**Huntingdon**  
Consulting Engineers Environmental Scientists

**LABORATORY NO:** 4416 94-2757

**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in  $\mu\text{g/Kg}$  which is equal to parts-per-billion)

Client ID: S-2

TCT ID: 15277

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	ND	250,000
PCB 1221	ND	250,000
PCB 1232	ND	250,000
PCB 1242	ND	250,000
PCB 1248	ND	250,000
PCB 1254	ND	250,000
PCB 1260	2,000,000	250,000
% Surrogate #1 Recovery:	-1%	
% Surrogate #2 Recovery:	-1%	

Date Extracted: 3/1/94

Date Analyzed: 3/7/94

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

**Huntingdon**  
Consulting Engineers Environmental Scientists

LABORATORY NO: 4416 94-2757

**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in  $\mu\text{g/Kg}$  which is equal to parts-per-billion)

Client ID: S-3

TCT ID: 15278

---

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	4,100	2,500
PCB 1221	ND	2,500
PCB 1232	ND	2,500
PCB 1242	ND	2,500
PCB 1248	ND	2,500
PCB 1254	18,000	2,500
PCB 1260	15,000	2,500
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

Date Extracted: 3/1/94

Date Analyzed: 3/7/94

---

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

**Huntingdon**  
Consulting Engineers Environmental Scientists

LABORATORY NO: 4416 94-2757

**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in  $\mu\text{g/Kg}$  which is equal to parts-per-billion)

Client ID: S-4

TCT ID: 15279

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	73,000	64,000
PCB 1221	ND	64,000
PCB 1232	ND	64,000
PCB 1242	ND	64,000
PCB 1248	ND	64,000
PCB 1254	160,000	64,000
PCB 1260	92,000	64,000
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

Date Extracted: 3/1/94

Date Analyzed: 3/6/94

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

**Huntingdon**  
Consulting Engineers Environmental Scientists

LABORATORY NO: 4416 94-2757



**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in µg/Kg which is equal to parts-per-billion)

**Client ID:** S-5

**TCT ID:** 15283

---

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	410,000	75,000
PCB 1221	ND <sup>1</sup>	75,000
PCB 1232	ND	75,000
PCB 1242	ND	75,000
PCB 1248	ND	75,000
PCB 1254	510,000	75,000
PCB 1260	210,000	75,000
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

**Date Extracted:** 3/1/94

**Date Analyzed:** 3/6/94

---

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are **reported** on a dry weight basis.

PQL = Practical **Quantitation** Limit

ND = Not **Detected**

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

**Huntingdon**  
Consulting Engineers Environmental Scientists

**LABORATORY NO:** 4416 94-2757

**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in  $\mu\text{g/Kg}$  which is equal to parts-per-billion)

**Client ID:** S-6

**TCT ID:** 15287

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	190,000	72,000
PCB 1221	ND	72,000
PCB 1232	ND	72,000
PCB 1242	ND	72,000
PCB 1248	ND	72,000
PCB 1254	300,000	72,000
PCB 1260	200,000	72,000
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

**Date Extracted:** 3/1/94

**Date Analyzed:** 3/6/94

---

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are **reported** on a dry weight basis.

PQL = Practical **Quantitation** Limit

ND = Not **Detected**

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

**Huntingdon**  
consulting engineers environmental scientists

**LABORATORY NO:** 4416 94-2757

**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in  $\mu\text{g/Kg}$  which is equal to parts-per-billion)

**Client ID:** S-7

**TCT ID:** 15289

---

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	55,000	13,000
PCB 1221	ND	13,000
PCB 1232	ND	13,000
PCB 1242	ND	13,000
PCB 1248	ND	13,000
PCB 1254	42,000	13,000
PCB 1260	39,000	13,000
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

**Date Extracted:** 3/1/94

**Date Analyzed:** 3/7/94

---

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

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**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in µg/Kg which is equal to parts-per-billion)

**Client ID:** S-8

**TCT ID:** 15290

---

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	100,000 <sup>2</sup>	75,000
PCB 1221	ND	75,000
PCB 1232	ND	75,000
PCB 1242	ND	75,000
PCB 1248	ND	75,000
PCB 1254	550,000	75,000
PCB 1260	80,000	75,000
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

**Date Extracted:** 3/1/94

**Date Analyzed:** 3/7/94

---

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

<sup>2</sup>Value was not confirmed within 25%, the lower value is reported.

All results are **reported** on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

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**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in  $\mu\text{g/Kg}$  which is equal to parts-per-billion)

**Client ID:** S-9

**TCT ID:** 15291

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	49,000	14,000
PCB 1221	ND	14,000
PCB 1232	ND	14,000
PCB 1242	ND	14,000
PCB 1248	ND	14,000
PCB 1254	83,000	14,000
PCB 1260	32,000	14,000
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

**Date Extracted:** 3/1/94

**Date Analyzed:** 3/7/94

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

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**POLYCHLORINATED BIPHENYL RESULTS**  
**EPA METHOD 8080**

(All values are in  $\mu\text{g/Kg}$  which is equal to parts-per-billion)

Client ID: S-10

TCT ID: 15292

<u>Parameter:</u>		<u>PQL</u>
PCB 1016	15,000	5,000
PCB 1221	ND	5,000
PCB 1232	ND	5,000
PCB 1242	ND	5,000
PCB 1248	ND	5,000
PCB 1254	24,000	5,000
PCB 1260	22,000	5,000
% Surrogate #1 Recovery:	-- <sup>1</sup> %	
% Surrogate #2 Recovery:	-- <sup>1</sup> %	

Date Extracted: 3/1/94

Date Analyzed: 3/7/94

---

<sup>1</sup>Surrogate diluted out due to high level of PCB in sample.

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Surrogate #1 = TCMX (2,4,5,6-tetrachloro-m-xylene)

Surrogate #2 = DCB (decachlorobiphenyl)

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

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# ecology and environment, inc.

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## MEMORANDUM

DATE: May 3, 1994

TO: John Nordine, Project Manager, E&E, Chicago, IL

FROM: Nabil Fayoumi, TAT-Chemist, E&E, Chicago, IL *Nf*

THRU: David Hendren, TAT-Chemist, E&E, Chicago, IL

SUBJ: Inorganic Data Quality Assurance Review, Scrap Metal Site,  
Chicago, Cook County, Illinois.

REF: Analytical TDD: T059402807      Project TDD: T059402007  
Analytical PAN: EIL0831AAA      Project PAN: EIL0831SAA

The data quality assurance review of 10 Soil samples collected from the Scrap Metal Site in Chicago, Illinois has been completed. Analysis for Total and TCLP Metals was performed by Twin City Testing located in St. Paul, Minnesota in accordance with U.S. EPA Methods SW-846-6010/7000.

The samples were numbered as following:

<u>TAT Sample #</u>	<u>Corresponding to -&gt;</u>	<u>Laboratory Sample #</u>
S-1		15270
S-2		15277
S-3		15278
S-4		15279
S-5		15283
S-6		15287
S-7		15289
S-8		15290
S-9		15291
S-10		15292

### Data Qualifications:

#### **I Sample Holding Time: Acceptable**

The samples were collected on 2/22/94 and analyzed between 3/1/94, and 3/18/94. The holding time criteria of 6 months for metals and 28 days for mercury from collection to analysis was satisfied.

#### **II Calibration: Acceptable**

**A. Initial Calibration:**

Calibration results were within the established quality control limits of 90-110% of the true value for metals, and 80-120% for mercury.

**B. Continuing Calibration:**

Calibration results showed that the control criteria of 90-110% for metals, and 80-120% for mercury were satisfied.

**III Method Blanks: Acceptable**

A method blank was analyzed with the samples. No contaminants were detected above the instrument detection limit.

**IV Interference Check Sample Analysis: Acceptable**

All parameters were within the Interference Check Sample (ICS) control limits of 80-120% of the true values. ICS was run at the beginning and end of sample analysis.

**V Matrix Spike/Matrix Spike Duplicate:**

**Spike Sample Analysis: Acceptable . .**

All Matrix Spike/Matrix Spike Duplicate recoveries were within the control limits of 80-120%.

**VI Optional Additional QC:**

**Laboratory Control Sample Analysis: Acceptable**

The quality control criteria of 80-120% were met for the control sample.

**VIII Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance For Removal Activities" (OSWER Directive 9360.4-01, April 1990).

Based upon the information provided, the data are acceptable for use.

## TCLP METAL RESULTS

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID:            S1                      S2                      S3

TCT ID:            15270                      15277                      15278

<u>Parameter</u>				<u>PQL</u>	<u>Test Date</u>	<u>Test Method</u>
Arsenic	ND	ND	ND	100	3/15/94	6010
Barium	1,500	2,800	2,700	10	3/15/94	6010
Cadmium	870	1,300	110	10	3/15/94	6010
Chromium	ND	ND	ND	10	3/15/94	6010
Lead	7,500	16,000	690	50	3/15/94	6010
Mercury	ND	ND	ND	0.40	3/18/94	7470
Selenium	ND	ND	ND	100	3/15/94	6010
Silver	ND	ND	ND	10	3/15/94	6010
TCLP Date:	3/14/94	3/14/94	3/14/94			

PQL = Practical Quantitation Limit

ND = Not Detected

Reference:            Federal Register, Volume 55, Number 126, June 1990, 40CFR, Method 1311.

EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

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## TCLP METAL RESULTS

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion, unless noted otherwise)

Client ID: S4 S4 S4

TCT ID: 15279 15279D 15279S

<u>Parameter</u>				<u>PQL</u>	<u>Test Date</u>	<u>Test Method</u>
Arsenic	ND	ND	106 %	100	3/15/94	6010
Barium	1,100	1,100	80 %	10	3/15/94	6010
Cadmium	230	220	90 %	10	3/15/94	6010
Chromium	10	ND	91 %	10	3/15/94	6010
Lead	8,200	8,100	81 %	50	3/15/94	6010
Mercury	ND	ND	125 %	0.40	3/18/94	7470
Selenium	ND	ND	113 %	100	3/15/94	6010
Silver	ND	ND	92 %	10	3/15/94	6010
TCLP Date:	3/14/94	3/14/94	3/14/94			

PQL = Practical Quantitation Limit

ND = Not Detected

D = Duplicate

S = Spike

Reference: Federal Register, Volume 55, Number 126, June 1990, 40CFR, Method 1311.

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## TCLP METAL RESULTS

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID: S5 S6 S7

TCT ID: 15283 15287 15289

<u>Parameter</u>				<u>PQL</u>	<u>Test Date</u>	<u>Test Method</u>
Arsenic	ND	ND	ND	100	3/15/94	6010
Barium	4,800	2,700	1,300	10	3/15/94	6010
Cadmium	910	660	1,200	10	3/15/94	6010
Chromium	ND	ND	ND	10	3/15/94	6010
Lead	45,000	4,300	7,400	50	3/15/94	6010
Mercury	ND	ND	ND	0.40	3/18/94	7470
Selenium	ND	ND	ND	100	3/15/94	6010
Silver	ND	ND	ND	10	3/15/94	6010
TCLP Date:	3/14/94	3/14/94	3/14/94			

PQL = Practical Quantitation Limit

ND = Not Detected

Reference: Federal Register, Volume 55, Number 126, June 1990, 40CFR, Method 1311.

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## TCLP METAL RESULTS

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID:           S8                   S9                   S10

TCT ID:           15290           15291           15292

<u>Parameter</u>				<u>PQL</u>	<u>Test Date</u>	<u>Test Method</u>
Arsenic	ND	ND	ND	100	3/15/94	6010
Barium	1,500	1,600	2,000	10	3/15/94	6010
Cadmium	850	480	690	10	3/15/94	6010
Chromium	12	15	ND	10	3/15/94	6010
Lead	5,300	71,000	32,000	50	3/15/94	6010
Mercury	ND	ND	ND	0.40	3/18/94	7470
Selenium	ND	ND	ND	100	3/15/94	6010
Silver	ND	ND	ND	10	3/15/94	6010
TCLP Date:	3/14/94	3/14/94	3/14/94			

PQL = Practical Quantitation Limit

ND = Not Detected

Reference:           Federal Register, Volume 55, Number 126, June 1990, 40CFR, Method 1311.

EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

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# ecology and environment, inc.

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International Specialists in the Environment

## MEMORANDUM

DATE: March 29, 1994

TO: John Nordine, Project Manager, E & E, Chicago, IL

FROM: Nabil Fayoumi, TAT-Chemist, E & E, Chicago, IL

THRU: David Hendren, TAT-Chemist, E & E, Chicago, IL

SUBJ: Organic Data Quality Assurance Review, Scrap Metal Site,  
Chicago, Cook County, Illinois.

REF: Analytical TDD: T059402807      Project TDD: T059402007  
Analytical PAN: EIL0831AAA      Project PAN: EIL0831SAA

The data quality assurance review of 10 soil samples collected from the Scrap Metal Site in Chicago, Illinois has been completed. Analysis for Semivolatile Organics (SVOA) was performed by Twin City Testing located in St. Paul, Minnesota in accordance with U.S. EPA SW-846 method 8270.

The samples were numbered as following:

<u>TAT Sample #</u>	<u>Corresponding to -&gt;</u>	<u>Laboratory Sample #</u>
S-1		15270
S-2		15277
S-3		15278
S-4		15279
S-5		15283
S-6		15287
S-7		15289
S-8		15290
S-9		15291
S-10		15292

### Data Qualifications:

I      Holding Time: Acceptable

The samples were collected on 2/22/94, extracted on 3/3/94, and analyzed between 3/8/94 and 3/10/94. The holding time criteria from collection to extraction of 14 days was satisfied. Extracts were analyzed within 40 days.

## II GC/MS Tuning: Acceptable

GC/MS ion abundance criteria using Decafluorotriphenylphosphine (DFTPP) were acceptable.

## III Calibration: Acceptable

### A. Initial Calibration:

A 5-point initial calibration was performed prior to analysis. All average relative response factors were greater than 0.05. All percent relative standard deviation (%RSD) between response factors were less than 30%, except 2,4-dinitrophenol (33.1 % RSD), which was not detected in any sample; therefore qualification was not necessary.

### B. Continuing Calibration:

The percent difference (%D) between initial and continuing calibration were within the quality control criteria of less than or equal to 25% for all detected compounds.

## IV Method Blank: Acceptable

The method blank was contaminated with Di-n-butylphthalate (47 PPB). No action was necessary because all reported sample values were greater than 10 times blank concentration level.

## V Surrogate Recovery: Acceptable

Surrogates in the matrix spike sample (number S-4MS) were recovered at less than 10% recovery. Since both samples S-4 and S-4MSD displayed acceptable surrogate recoveries, it appears that the poor surrogate response in sample S-4MS resulted from sample preparation problems.

## VI Matrix Spike/Matrix Spike Duplicates: Not Applicable

Fourteen out of 22 percent recoveries and 10 out of 11 relative percent differences for the MS/MSD were outside the established quality control criteria. This again probably resulted from sample S-4MS preparation problems.

## VII Internal Standards: Qualified

The internal standard (chrysene D-12) area counts were outside (below) the range of -50% to +100% from the associated calibration standard for the following samples S-3, S-4, S-5, S-6, S-7, S-8, S-9, and S-10; therefore, all positive values quantitated from chrysene D-12 in these samples are flagged "J" (estimated).

## VIII Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance for Removal Activities" (OSWER 9360.4-01 April, 1990). Based upon the information provided, the data are acceptable for use with the above stated qualifications.

**Data Qualifiers and Definitions:**

J - The associated numerical value is an estimated quantity because the reported concentration is less than the contract required detection limit or quality control criteria were not met.

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S1	Lab ID (HSN): 15270
Matrix: SOIL	Filename: 4068K08
Date Sampled: 02/22/94	Sample Size: 15.5 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 24.08

Compounds:	ug/Kg (PPB)	EQL
Phenol	1700	1700
bis(2-Chloroethyl) ether	1700 U	1700
2-Chlorophenol	1700 U	1700
1,3-Dichlorobenzene	1700 U	1700
1,4-Dichlorobenzene	1700 U	1700
1,2-Dichlorobenzene	1700 U	1700
2-Methylphenol	1700 U	1700
2,2'-oxybis(1-Chloropropane)	1700 U	1700
4-Methylphenol	220 J	1700
N-Nitroso-di-n-propylamine	1700 U	1700
Hexachloroethane	1700 U	1700
Nitrobenzene	1700 U	1700
Isophorone	1700 U	1700
2-Nitrophenol	1700 U	1700
2,4-Dimethylphenol	1700 U	1700
bis(2-Chloroethoxy) methane	1700 U	1700
2,4-Dichlorophenol	1700 U	1700
1,2,4-Trichlorobenzene	1300 J	1700
Naphthalene	970 J	1700
4-Chloroaniline	1700 U	1700
Hexachlorobutadiene	1700 U	1700
4-Chloro-3-methylphenol	1700 U	1700
2-Methylnaphthalene	2900	1700
Hexachlorocyclopentadiene	1700 U	1700
2,4,6-Trichlorophenol	1700 U	1700
2,4,5-Trichlorophenol	4200 U	4200
2-Chloronaphthalene	1700 U	1700
2-Nitroaniline	4200 U	4200
Dimethylphthalate	510 J	1700
Acenaphthylene	1700 U	1700
2,6-Dinitrotoluene	1700 U	1700
3-Nitroaniline	4200 U	4200
Acenaphthene	710 J	1700
2,4-Dinitrophenol	4200 U	4200
4-Nitrophenol	4200 U	4200
Dibenzofuran	1700 U	1700
2,4-Dinitrotoluene	1700 U	1700
Diethylphthalate	1700 U	1700
4-Chlorophenyl-phenylether	1700 U	1700
Fluorene	1100 J	1700
4-Nitroaniline	4200 U	4200
4,6-Dinitro-2-methylphenol	4200 U	4200

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S1  
Matrix: SOIL

Lab ID (HSN): 15270  
Filename: 4068K08

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	1700 U	1700
4-Bromophenyl-phenylether	1700 U	1700
Hexachlorobenzene	1700 U	1700
Pentachlorophenol	4200 U	4200
Phenanthrene	3900	1700
Anthracene	290 J	1700
Carbazole	1700 U	1700
Di-n-butylphthalate	2600 B	1700
Fluoranthene	2500	1700
Pyrene	4200	1700
Butylbenzylphthalate	2500	1700
3,3'-Dichlorobenzidine	1700 U	1700
Benz(a)anthracene	1700 J	1700
Chrysene	1900	1700
bis(2-Ethylhexyl)phthalate	100000 E	1700
Di-n-octylphthalate	1700 U	1700
Benzo(b)fluoranthene	2800	1700
Benzo(k)fluoranthene	1100 J	1700
Benzo(a)pyrene	2000	1700
Indeno(1,2,3-cd)pyrene	1600 J	1700
Dibenz(a,h)anthracene	1700 U	1700
Benzo(g,h,i)perylene	1900	1700

Surrogate Recovery		QC LIMITS
2-Fluorophenol	55%	25-121%
Phenol-d5	63%	24-113%
2-Chlorophenol-d4	76%	20-130%
1,2-Dichlorobenzene-d4	87%	20-130%
Nitrobenzene-d5	51%	23-120%
2-Fluorobiphenyl	114%	30-115%
2,4,6-Tribromophenol	57%	19-122%
Terphenyl-d14	112%	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

HPN: 2757

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S1	Lab ID (HSN): 15270 DL
Matrix: SOIL	Filename: 4067L15
Date Sampled: 02/22/94	Sample Size: 15.5 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 24.08

Compounds:	ug/Kg (PPB)	EQL
Phenol	3100 JD	17000
bis(2-Chloroethyl) ether	17000 UD	17000
2-Chlorophenol	17000 UD	17000
1,3-Dichlorobenzene	17000 UD	17000
1,4-Dichlorobenzene	17000 UD	17000
1,2-Dichlorobenzene	17000 UD	17000
2-Methylphenol	17000 UD	17000
2,2'-oxybis(1-Chloropropane)	17000 UD	17000
4-Methylphenol	17000 UD	17000
N-Nitroso-di-n-propylamine	17000 UD	17000
Hexachloroethane	17000 UD	17000
Nitrobenzene	17000 UD	17000
Isophorone	17000 UD	17000
2-Nitrophenol	17000 UD	17000
2,4-Dimethylphenol	17000 UD	17000
bis(2-Chloroethoxy)methane	17000 UD	17000
2,4-Dichlorophenol	17000 UD	17000
1,2,4-Trichlorobenzene	17000 UD	17000
Naphthalene	17000 UD	17000
4-Chloroaniline	17000 UD	17000
Hexachlorobutadiene	17000 UD	17000
4-Chloro-3-methylphenol	17000 UD	17000
2-Methylnaphthalene	3200 JD	17000
Hexachlorocyclopentadiene	17000 UD	17000
2,4,6-Trichlorophenol	17000 UD	17000
2,4,5-Trichlorophenol	42000 UD	42000
2-Chloronaphthalene	17000 UD	17000
2-Nitroaniline	42000 UD	42000
Dimethylphthalate	17000 UD	17000
Acenaphthylene	17000 UD	17000
2,6-Dinitrotoluene	17000 UD	17000
3-Nitroaniline	42000 UD	42000
Acenaphthene	17000 UD	17000
2,4-Dinitrophenol	42000 UD	42000
4-Nitrophenol	42000 UD	42000
Dibenzofuran	17000 UD	17000
2,4-Dinitrotoluene	17000 UD	17000
Diethylphthalate	17000 UD	17000
4-Chlorophenyl-phenylether	17000 UD	17000
Fluorene	1700 JD	17000
4-Nitroaniline	42000 UD	42000
4,6-Dinitro-2-methylphenol	42000 UD	42000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S1  
Matrix: SOIL

Lab ID (HSN): 15270 DL  
Filename: 4067L15

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	17000 UD	17000
4-Bromophenyl-phenylether	17000 UD	17000
Hexachlorobenzene	17000 UD	17000
Pentachlorophenol	42000 UD	42000
Phenanthrene	4100 JD	17000
Anthracene	17000 UD	17000
Carbazole	17000 UD	17000
Di-n-butylphthalate	4700 JDB	17000
Fluoranthene	2900 JD	17000
Pyrene	7100 JD	17000
Butylbenzylphthalate	7700 JD	17000
3,3'-Dichlorobenzidine	17000 UD	17000
Benz(a)anthracene	1800 JD	17000
Chrysene	2000 JD	17000
bis(2-Ethylhexyl)phthalate	200000 ED	17000
Di-n-octylphthalate	17000 UD	17000
Benzo(b)fluoranthene	3000 JD	17000
Benzo(k)fluoranthene	17000 UD	17000
Benzo(a)pyrene	1900 JD	17000
Indeno(1,2,3-cd)pyrene	17000 UD	17000
Dibenz(a,h)anthracene	17000 UD	17000
Benzo(g,h,i)perylene	17000 UD	17000

Surrogate Recovery		QC LIMITS
2-Fluorophenol	79%JD	25-121%
Phenol-d5	93%JD	24-113%
2-Chlorophenol-d4	89%JD	20-130%
1,2-Dichlorobenzene-d4	90%JD	20-130%
Nitrobenzene-d5	90%JD	23-120%
2-Fluorobiphenyl	116%JD	30-115%
2,4,6-Tribromophenol	73%JD	19-122%
Terphenyl-d14	152%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
EQL = Estimated Quantitation Limit (lower calibration limit)  
U = Undetected at the given EQL  
J = Detected below the EQL (estimated value)  
E = Exceeds the upper calibration limit (estimated value)  
B = Also detected in the associated Blank  
D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
November 1986, 3rd Edition.

HPN: 2757

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S1	Lab ID (HSN): 15270 DL2
Matrix: SOIL	Filename: 4068K04
Date Sampled: 02/22/94	Sample Size: 15.5 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 20
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 24.08

Compounds:	ug/Kg (PPB)	EQL
Phenol	34000 UD	34000
bis(2-Chloroethyl) ether	34000 UD	34000
2-Chlorophenol	34000 UD	34000
1,3-Dichlorobenzene	34000 UD	34000
1,4-Dichlorobenzene	34000 UD	34000
1,2-Dichlorobenzene	34000 UD	34000
2-Methylphenol	34000 UD	34000
2,2'-oxybis(1-Chloropropane)	34000 UD	34000
4-Methylphenol	34000 UD	34000
N-Nitroso-di-n-propylamine	34000 UD	34000
Hexachloroethane	34000 UD	34000
Nitrobenzene	34000 UD	34000
Isophorone	34000 UD	34000
2-Nitrophenol	34000 UD	34000
2,4-Dimethylphenol	34000 UD	34000
bis(2-Chloroethoxy) methane	34000 UD	34000
2,4-Dichlorophenol	34000 UD	34000
1,2,4-Trichlorobenzene	34000 UD	34000
Naphthalene	34000 UD	34000
4-Chloroaniline	34000 UD	34000
Hexachlorobutadiene	34000 UD	34000
4-Chloro-3-methylphenol	34000 UD	34000
2-Methylnaphthalene	34000 UD	34000
Hexachlorocyclopentadiene	34000 UD	34000
2,4,6-Trichlorophenol	34000 UD	34000
2,4,5-Trichlorophenol	85000 UD	85000
2-Chloronaphthalene	34000 UD	34000
2-Nitroaniline	85000 UD	85000
Dimethylphthalate	34000 UD	34000
Acenaphthylene	34000 UD	34000
2,6-Dinitrotoluene	34000 UD	34000
3-Nitroaniline	85000 UD	85000
Acenaphthene	34000 UD	34000
2,4-Dinitrophenol	85000 UD	85000
4-Nitrophenol	85000 UD	85000
Dibenzofuran	34000 UD	34000
2,4-Dinitrotoluene	34000 UD	34000
Diethylphthalate	34000 UD	34000
4-Chlorophenyl-phenylether	34000 UD	34000
Fluorene	34000 UD	34000
4-Nitroaniline	85000 UD	85000
4,6-Dinitro-2-methylphenol	85000 UD	85000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S1  
Matrix: SOIL

Lab ID (HSN): 15270 DL2  
Filename: 4068K04

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	34000 UD	34000
4-Bromophenyl-phenylether	34000 UD	34000
Hexachlorobenzene	34000 UD	34000
Pentachlorophenol	85000 UD	85000
Phenanthrene	4600 JD	34000
Anthracene	34000 UD	34000
Carbazole	34000 UD	34000
Di-n-butylphthalate	4900 JDB	34000
Fluoranthene	3700 JD	34000
Pyrene	8000 JD	34000
Butylbenzylphthalate	8500 JD	34000
3,3'-Dichlorobenzidine	34000 UD	34000
Benz(a)anthracene	34000 UD	34000
Chrysene	34000 UD	34000
bis(2-Ethylhexyl)phthalate	180000 D	34000
Di-n-octylphthalate	34000 UD	34000
Benzo(b)fluoranthene	34000 UD	34000
Benzo(k)fluoranthene	34000 UD	34000
Benzo(a)pyrene	34000 UD	34000
Indeno(1,2,3-cd)pyrene	34000 UD	34000
Dibenz(a,h)anthracene	34000 UD	34000
Benzo(g,h,i)perylene	34000 UD	34000

Surrogate Recovery		QC LIMITS
2-Fluorophenol	85%JD	25-121%
Phenol-d5	101%JD	24-113%
2-Chlorophenol-d4	91%JD	20-130%
1,2-Dichlorobenzene-d4	92%JD	20-130%
Nitrobenzene-d5	108%JD	23-120%
2-Fluorobiphenyl	112%JD	30-115%
2,4,6-Tribromophenol	75%JD	19-122%
Terphenyl-d14	168%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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Soil Engineering Environmental Scientists

HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S2	Lab ID (HSN): 15277
Matrix: SOIL	Filename: 4068K09
Date Sampled: 02/22/94	Sample Size: 15.2 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 28.24

Compounds:	ug/Kg (PPB)	EQL
Phenol	1800 U	1800
bis(2-Chloroethyl) ether	1800 U	1800
2-Chlorophenol	1800 U	1800
1,3-Dichlorobenzene	1800 U	1800
1,4-Dichlorobenzene	1800 U	1800
1,2-Dichlorobenzene	1800 U	1800
2-Methylphenol	1800 U	1800
2,2'-oxybis(1-Chloropropane)	1800 U	1800
4-Methylphenol	1800 U	1800
N-Nitroso-di-n-propylamine	1800 U	1800
Hexachloroethane	1800 U	1800
Nitrobenzene	1800 U	1800
Isophorone	1800 U	1800
2-Nitrophenol	1800 U	1800
2,4-Dimethylphenol	1800 U	1800
bis(2-Chloroethoxy) methane	1800 U	1800
2,4-Dichlorophenol	1800 U	1800
1,2,4-Trichlorobenzene	7500	1800
Naphthalene	180 J	1800
4-Chloroaniline	1800 U	1800
Hexachlorobutadiene	1800 U	1800
4-Chloro-3-methylphenol	1800 U	1800
2-Methylnaphthalene	180 J	1800
Hexachlorocyclopentadiene	1800 U	1800
2,4,6-Trichlorophenol	1800 U	1800
2,4,5-Trichlorophenol	4600 U	4600
2-Chloronaphthalene	1800 U	1800
2-Nitroaniline	4600 U	4600
Dimethylphthalate	1800 U	1800
Acenaphthylene	1800 U	1800
2,6-Dinitrotoluene	1800 U	1800
3-Nitroaniline	4600 U	4600
Acenaphthene	1800 U	1800
2,4-Dinitrophenol	4600 U	4600
4-Nitrophenol	4600 U	4600
Dibenzofuran	1800 U	1800
2,4-Dinitrotoluene	1800 U	1800
Diethylphthalate	1800 U	1800
4-Chlorophenyl-phenylether	1800 U	1800
Fluorene	1800 U	1800
4-Nitroaniline	4600 U	4600
4,6-Dinitro-2-methylphenol	4600 U	4600

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S2  
Matrix: SOIL

Lab ID (HSN): 15277  
Filename: 4068K09

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	1800 U	1800
4-Bromophenyl-phenylether	1800 U	1800
Hexachlorobenzene	1800 U	1800
Pentachlorophenol	4600 U	4600
Phenanthrene	1300 J	1800
Anthracene	180 J	1800
Carbazole	1800 U	1800
Di-n-butylphthalate	2200 B	1800
Fluoranthene	1200 J	1800
Pyrene	2100	1800
Butylbenzylphthalate	1800 U	1800
3,3'-Dichlorobenzidine	1800 U	1800
Benz(a)anthracene	1100 J	1800
Chrysene	1400 J	1800
bis(2-Ethylhexyl)phthalate	1200 J	1800
Di-n-octylphthalate	1800 U	1800
Benzo(b)fluoranthene	1600 J	1800
Benzo(k)fluoranthene	940 J	1800
Benzo(a)pyrene	1200 J	1800
Indeno(1,2,3-cd)pyrene	1500 J	1800
Dibenz(a,h)anthracene	1800 U	1800
Benzo(g,h,i)perylene	1700 J	1800

Surrogate Recovery		QC LIMITS
2-Fluorophenol	36%	25-121%
Phenol-d5	38%	24-113%
2-Chlorophenol-d4	47%	20-130%
1,2-Dichlorobenzene-d4	56%	20-130%
Nitrobenzene-d5	33%J	23-120%
2-Fluorobiphenyl	61%	30-115%
2,4,6-Tribromophenol	32%	19-122%
Terphenyl-d14	70%	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S2	Lab ID (HSN): 15277 DL
Matrix: SOIL	Filename: 4067L16
Date Sampled: 02/22/94	Sample Size: 15.2 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 28.24

Compounds:	ug/Kg (PPB)	EQL
Phenol	18000 UD	18000
bis(2-Chloroethyl) ether	18000 UD	18000
2-Chlorophenol	18000 UD	18000
1,3-Dichlorobenzene	18000 UD	18000
1,4-Dichlorobenzene	18000 UD	18000
1,2-Dichlorobenzene	18000 UD	18000
2-Methylphenol	18000 UD	18000
2,2'-oxybis(1-Chloropropane)	18000 UD	18000
4-Methylphenol	18000 UD	18000
N-Nitroso-di-n-propylamine	18000 UD	18000
Hexachloroethane	18000 UD	18000
Nitrobenzene	18000 UD	18000
Isophorone	18000 UD	18000
2-Nitrophenol	18000 UD	18000
2,4-Dimethylphenol	18000 UD	18000
bis(2-Chloroethoxy) methane	18000 UD	18000
2,4-Dichlorophenol	18000 UD	18000
1,2,4-Trichlorobenzene	6000 JD	18000
Naphthalene	18000 UD	18000
4-Chloroaniline	18000 UD	18000
Hexachlorobutadiene	18000 UD	18000
4-Chloro-3-methylphenol	18000 UD	18000
2-Methylnaphthalene	18000 UD	18000
Hexachlorocyclopentadiene	18000 UD	18000
2,4,6-Trichlorophenol	18000 UD	18000
2,4,5-Trichlorophenol	46000 UD	46000
2-Chloronaphthalene	18000 UD	18000
2-Nitroaniline	46000 UD	46000
Dimethylphthalate	18000 UD	18000
Acenaphthylene	18000 UD	18000
2,6-Dinitrotoluene	18000 UD	18000
3-Nitroaniline	46000 UD	46000
Acenaphthene	18000 UD	18000
2,4-Dinitrophenol	46000 UD	46000
4-Nitrophenol	46000 UD	46000
Dibenzofuran	18000 UD	18000
2,4-Dinitrotoluene	18000 UD	18000
Diethylphthalate	18000 UD	18000
4-Chlorophenyl-phenylether	18000 UD	18000
Fluorene	18000 UD	18000
4-Nitroaniline	46000 UD	46000
4,6-Dinitro-2-methylphenol	46000 UD	46000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S2  
Matrix: SOIL

Lab ID (HSN): 15277 DL  
Filename: 4067L16

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	18000 UD	18000
4-Bromophenyl-phenylether	18000 UD	18000
Hexachlorobenzene	18000 UD	18000
Pentachlorophenol	46000 UD	46000
Phenanthrene	18000 UD	18000
Anthracene	18000 UD	18000
Carbazole	18000 UD	18000
Di-n-butylphthalate	3000 JDB	18000
Fluoranthene	18000 UD	18000
Pyrene	2800 JD	18000
Butylbenzylphthalate	18000 UD	18000
3,3'-Dichlorobenzidine	18000 UD	18000
Benz(a)anthracene	18000 UD	18000
Chrysene	1800 JD	18000
bis(2-Ethylhexyl)phthalate	2800 JD	18000
Di-n-octylphthalate	18000 UD	18000
Benzo(b)fluoranthene	2100 JD	18000
Benzo(k)fluoranthene	18000 UD	18000
Benzo(a)pyrene	18000 UD	18000
Indeno(1,2,3-cd)pyrene	18000 UD	18000
Dibenz(a,h)anthracene	18000 UD	18000
Benzo(g,h,i)perylene	18000 UD	18000

Surrogate Recovery		QC LIMITS
2-Fluorophenol	49%JD	25-121%
Phenol-d5	56%JD	24-113%
2-Chlorophenol-d4	53%JD	20-130%
1,2-Dichlorobenzene-d4	56%JD	20-130%
Nitrobenzene-d5	56%JD	23-120%
2-Fluorobiphenyl	66%JD	30-115%
2,4,6-Tribromophenol	36%JD	19-122%
Terphenyl-d14	90%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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Consulting Engineers Environmental Scientists

HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S3	Lab ID (HSN): 15278
Matrix: SOIL	Filename: 4068K10
Date Sampled: 02/22/94	Sample Size: 15 grams
Date Received: 02/24/94	Extract Vol.: 500 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 30.97

Compounds:	ug/Kg (PPB)	EQL
Phenol	970 U	970
bis(2-Chloroethyl) ether	970 U	970
2-Chlorophenol	970 U	970
1,3-Dichlorobenzene	970 U	970
1,4-Dichlorobenzene	970 U	970
1,2-Dichlorobenzene	970 U	970
2-Methylphenol	970 U	970
2,2'-oxybis(1-Chloropropane)	970 U	970
4-Methylphenol	970 U	970
N-Nitroso-di-n-propylamine	970 U	970
Hexachloroethane	970 U	970
Nitrobenzene	970 U	970
Isophorone	970 U	970
2-Nitrophenol	970 U	970
2,4-Dimethylphenol	970 U	970
bis(2-Chloroethoxy) methane	970 U	970
2,4-Dichlorophenol	970 U	970
1,2,4-Trichlorobenzene	970 U	970
Naphthalene	970 U	970
4-Chloroaniline	970 U	970
Hexachlorobutadiene	970 U	970
4-Chloro-3-methylphenol	970 U	970
2-Methylnaphthalene	970 U	970
Hexachlorocyclopentadiene	970 U	970
2,4,6-Trichlorophenol	970 U	970
2,4,5-Trichlorophenol	2400 U	2400
2-Chloronaphthalene	970 U	970
2-Nitroaniline	2400 U	2400
Dimethylphthalate	970 U	970
Acenaphthylene	970 U	970
2,6-Dinitrotoluene	970 U	970
3-Nitroaniline	2400 U	2400
Acenaphthene	970 U	970
2,4-Dinitrophenol	2400 U	2400
4-Nitrophenol	2400 U	2400
Dibenzofuran	970 U	970
2,4-Dinitrotoluene	970 U	970
Diethylphthalate	970 U	970
4-Chlorophenyl-phenylether	970 U	970
Fluorene	970 U	970
4-Nitroaniline	2400 U	2400
4,6-Dinitro-2-methylphenol	2400 U	2400

(continued)



TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S3  
Matrix: SOIL

Lab ID (HSN): 15278  
Filename: 4068K10

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	970 U	970
4-Bromophenyl-phenylether	970 U	970
Hexachlorobenzene	970 U	970
Pentachlorophenol	2400 U	2400
Phenanthrene	880 J	970
Anthracene	140 J	970
Carbazole	970 U	970
Di-n-butylphthalate	1100 B	970
Fluoranthene	1700	970
Pyrene	3500 J Y	970
Butylbenzylphthalate	970 U Y	970
3,3'-Dichlorobenzidine	970 U Y	970
Benz(a)anthracene	2000 J Y	970
Chrysene	2200 J Y	970
bis(2-Ethylhexyl)phthalate	3300 J Y	970
Di-n-octylphthalate	970 U	970
Benzo(b)fluoranthene	3600	970
Benzo(k)fluoranthene	1100	970
Benzo(a)pyrene	2600	970
Indeno(1,2,3-cd)pyrene	2600	970
Dibenz(a,h)anthracene	970 U	970
Benzo(g,h,i)perylene	2600	970

Surrogate Recovery		QC LIMITS
2-Fluorophenol	25%	25-121%
Phenol-d5	34%	24-113%
2-Chlorophenol-d4	38%	20-130%
1,2-Dichlorobenzene-d4	40%	20-130%
Nitrobenzene-d5	29%	23-120%
2-Fluorobiphenyl	64%	30-115%
2,4,6-Tribromophenol	41%	19-122%
Terphenyl-d14	84% Y	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 Y = Associated internal standard failed method criteria

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

HPN: 2757

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S3	Lab ID (HSN): 15278 DL
Matrix: SOIL	Filename: 4067L17
Date Sampled: 02/22/94	Sample Size: 15 grams
Date Received: 02/24/94	Extract Vol.: 500 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 30.97

Compounds:	ug/Kg (PPB)	EQL
Phenol	9700 UD	9700
bis(2-Chloroethyl) ether	9700 UD	9700
2-Chlorophenol	9700 UD	9700
1,3-Dichlorobenzene	9700 UD	9700
1,4-Dichlorobenzene	9700 UD	9700
1,2-Dichlorobenzene	9700 UD	9700
2-Methylphenol	9700 UD	9700
2,2'-oxybis(1-Chloropropane)	9700 UD	9700
4-Methylphenol	9700 UD	9700
N-Nitroso-di-n-propylamine	9700 UD	9700
Hexachloroethane	9700 UD	9700
Nitrobenzene	9700 UD	9700
Isophorone	9700 UD	9700
2-Nitrophenol	9700 UD	9700
2,4-Dimethylphenol	9700 UD	9700
bis(2-Chloroethoxy) methane	9700 UD	9700
2,4-Dichlorophenol	9700 UD	9700
1,2,4-Trichlorobenzene	9700 UD	9700
Naphthalene	9700 UD	9700
4-Chloroaniline	9700 UD	9700
Hexachlorobutadiene	9700 UD	9700
4-Chloro-3-methylphenol	9700 UD	9700
2-Methylnaphthalene	9700 UD	9700
Hexachlorocyclopentadiene	9700 UD	9700
2,4,6-Trichlorophenol	9700 UD	9700
2,4,5-Trichlorophenol	24000 UD	24000
2-Chloronaphthalene	9700 UD	9700
2-Nitroaniline	24000 UD	24000
Dimethylphthalate	9700 UD	9700
Acenaphthylene	9700 UD	9700
2,6-Dinitrotoluene	9700 UD	9700
3-Nitroaniline	24000 UD	24000
Acenaphthene	9700 UD	9700
2,4-Dinitrophenol	24000 UD	24000
4-Nitrophenol	24000 UD	24000
Dibenzofuran	9700 UD	9700
2,4-Dinitrotoluene	9700 UD	9700
Diethylphthalate	9700 UD	9700
4-Chlorophenyl-phenylether	9700 UD	9700
Fluorene	9700 UD	9700
4-Nitroaniline	24000 UD	24000
4,6-Dinitro-2-methylphenol	24000 UD	24000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S3  
Matrix: SOIL

Lab ID (HSN): 15278 DL  
Filename: 4067L17

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	9700 UD	9700
4-Bromophenyl-phenylether	9700 UD	9700
Hexachlorobenzene	9700 UD	9700
Pentachlorophenol	24000 UD	24000
Phenanthrene	1000 JD	9700
Anthracene	9700 UD	9700
Carbazole	9700 UD	9700
Di-n-butylphthalate	1600 JDB	9700
Fluoranthene	2700 JD	9700
Pyrene	4100 JD	9700
Butylbenzylphthalate	9700 UD	9700
3,3'-Dichlorobenzidine	9700 UD	9700
Benz(a)anthracene	2300 JD	9700
Chrysene	2400 JD	9700
bis(2-Ethylhexyl)phthalate	6200 JD	9700
Di-n-octylphthalate	9700 UD	9700
Benzo(b)fluoranthene	4200 JD	9700
Benzo(k)fluoranthene	1300 JD	9700
Benzo(a)pyrene	2800 JD	9700
Indeno(1,2,3-cd)pyrene	3000 JD	9700
Dibenz(a,h)anthracene	9700 UD	9700
Benzo(g,h,i)perylene	2900 JD	9700

Surrogate Recovery		QC LIMITS
2-Fluorophenol	36%JD	25-121%
Phenol-d5	50%JD	24-113%
2-Chlorophenol-d4	46%JD	20-130%
1,2-Dichlorobenzene-d4	41%JD	20-130%
Nitrobenzene-d5	46%JD	23-120%
2-Fluorobiphenyl	75%JD	30-115%
2,4,6-Tribromophenol	51%JD	19-122%
Terphenyl-d14	110%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S4	Lab ID (HSN): 15279
Matrix: SOIL	Filename: 4068K07
Date Sampled: 02/22/94	Sample Size: 15.2 grams
Date Received: 02/24/94	Extract Vol.: 1500 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 5.88

Compounds:	ug/Kg (PPB)	EQL
Phenol	2100 U	2100
bis(2-Chloroethyl) ether	2100 U	2100
2-Chlorophenol	2100 U	2100
1,3-Dichlorobenzene	2100 U	2100
1,4-Dichlorobenzene	2100 U	2100
1,2-Dichlorobenzene	2100 U	2100
2-Methylphenol	2100 U	2100
2,2'-oxybis(1-Chloropropane)	2100 U	2100
4-Methylphenol	2100 U	2100
N-Nitroso-di-n-propylamine	2100 U	2100
Hexachloroethane	2100 U	2100
Nitrobenzene	2100 U	2100
Isophorone	2100 U	2100
2-Nitrophenol	2100 U	2100
2,4-Dimethylphenol	2100 U	2100
bis(2-Chloroethoxy) methane	2100 U	2100
2,4-Dichlorophenol	2100 U	2100
1,2,4-Trichlorobenzene	2100 U	2100
Naphthalene	2100 U	2100
4-Chloroaniline	2100 U	2100
Hexachlorobutadiene	2100 U	2100
4-Chloro-3-methylphenol	2100 U	2100
2-Methylnaphthalene	2100 U	2100
Hexachlorocyclopentadiene	2100 U	2100
2,4,6-Trichlorophenol	2100 U	2100
2,4,5-Trichlorophenol	5200 U	5200
2-Chloronaphthalene	2100 U	2100
2-Nitroaniline	5200 U	5200
Dimethylphthalate	2100 U	2100
Acenaphthylene	2100 U	2100
2,6-Dinitrotoluene	2100 U	2100
3-Nitroaniline	5200 U	5200
Acenaphthene	2100 U	2100
2,4-Dinitrophenol	5200 U	5200
4-Nitrophenol	5200 U	5200
Dibenzofuran	2100 U	2100
2,4-Dinitrotoluene	2100 U	2100
Diethylphthalate	2100 U	2100
4-Chlorophenyl-phenylether	2100 U	2100
Fluorene	2100 U	2100
4-Nitroaniline	5200 U	5200
4,6-Dinitro-2-methylphenol	5200 U	5200

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S4  
Matrix: SOIL

Lab ID (HSN): 15279  
Filename: 4068K07

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	2100 U	2100
4-Bromophenyl-phenylether	2100 U	2100
Hexachlorobenzene	2100 U	2100
Pentachlorophenol	5200 U	5200
Phenanthrene	1800 J	2100
Anthracene	240 J	2100
Carbazole	2100 U	2100
Di-n-butylphthalate	2100 U	2100
Fluoranthene	2100 U	2100
Pyrene	2100 U Y	2100
Butylbenzylphthalate	2100 U Y	2100
3,3'-Dichlorobenzidine	2100 U Y	2100
Benz(a)anthracene	2100 U Y	2100
Chrysene	2100 U Y	2100
bis(2-Ethylhexyl)phthalate	6300 J Y	2100
Di-n-octylphthalate	2100 U	2100
Benzo(b)fluoranthene	4200	2100
Benzo(k)fluoranthene	1300 J	2100
Benzo(a)pyrene	2500	2100
Indeno(1,2,3-cd)pyrene	2600	2100
Dibenz(a,h)anthracene	2100 U	2100
Benzo(g,h,i)perylene	3100	2100

Surrogate Recovery		QC LIMITS
2-Fluorophenol	24%J	25-121%
Phenol-d5	48%	24-113%
2-Chlorophenol-d4	46%	20-130%
1,2-Dichlorobenzene-d4	50%J	20-130%
Nitrobenzene-d5	42%J	23-120%
2-Fluorobiphenyl	107%	30-115%
2,4,6-Tribromophenol	52%	19-122%
Terphenyl-d14	115% Y	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
EQL = Estimated Quantitation Limit (lower calibration limit)  
U = Undetected at the given EQL  
J = Detected below the EQL (estimated value)  
E = Exceeds the upper calibration limit (estimated value)  
B = Also detected in the associated Blank  
Y = Associated internal standard failed method criteria

Note: All results are reported on a dry weight basis.  
Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
November 1986, 3rd Edition.

HPN: 2757

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S4	Lab ID (HSN): 15279 DL
Matrix: SOIL	Filename: 4067L14
Date Sampled: 02/22/94	Sample Size: 15.2 grams
Date Received: 02/24/94	Extract Vol.: 1500 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 5.88

Compounds:	ug/Kg (PPB)	EQL
Phenol	21000 UD	21000
bis(2-Chloroethyl) ether	21000 UD	21000
2-Chlorophenol	21000 UD	21000
1,3-Dichlorobenzene	21000 UD	21000
1,4-Dichlorobenzene	21000 UD	21000
1,2-Dichlorobenzene	21000 UD	21000
2-Methylphenol	21000 UD	21000
2,2'-oxybis(1-Chloropropane)	21000 UD	21000
4-Methylphenol	21000 UD	21000
N-Nitroso-di-n-propylamine	21000 UD	21000
Hexachloroethane	21000 UD	21000
Nitrobenzene	21000 UD	21000
Isophorone	21000 UD	21000
2-Nitrophenol	21000 UD	21000
2,4-Dimethylphenol	21000 UD	21000
bis(2-Chloroethoxy) methane	21000 UD	21000
2,4-Dichlorophenol	21000 UD	21000
1,2,4-Trichlorobenzene	21000 UD	21000
Naphthalene	21000 UD	21000
4-Chloroaniline	21000 UD	21000
Hexachlorobutadiene	21000 UD	21000
4-Chloro-3-methylphenol	21000 UD	21000
2-Methylnaphthalene	21000 UD	21000
Hexachlorocyclopentadiene	21000 UD	21000
2,4,6-Trichlorophenol	21000 UD	21000
2,4,5-Trichlorophenol	52000 UD	52000
2-Chloronaphthalene	21000 UD	21000
2-Nitroaniline	52000 UD	52000
Dimethylphthalate	21000 UD	21000
Acenaphthylene	21000 UD	21000
2,6-Dinitrotoluene	21000 UD	21000
3-Nitroaniline	52000 UD	52000
Acenaphthene	21000 UD	21000
2,4-Dinitrophenol	52000 UD	52000
4-Nitrophenol	52000 UD	52000
Dibenzofuran	21000 UD	21000
2,4-Dinitrotoluene	21000 UD	21000
Diethylphthalate	21000 UD	21000
4-Chlorophenyl-phenylether	21000 UD	21000
Fluorene	21000 UD	21000
4-Nitroaniline	52000 UD	52000
4,6-Dinitro-2-methylphenol	52000 UD	52000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S4  
Matrix: SOIL

Lab ID (HSN): 15279 DL  
Filename: 4067L14

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	21000 UD	21000
4-Bromophenyl-phenylether	21000 UD	21000
Hexachlorobenzene	21000 UD	21000
Pentachlorophenol	52000 UD	52000
Phenanthrene	2400 JD	21000
Anthracene	21000 UD	21000
Carbazole	21000 UD	21000
Di-n-butylphthalate	21000 UD	21000
Fluoranthene	3800 JD	21000
Pyrene	7300 JD	21000
Butylbenzylphthalate	21000 UD	21000
3,3'-Dichlorobenzidine	21000 UD	21000
Benz(a)anthracene	2500 JD	21000
Chrysene	2800 JD	21000
bis(2-Ethylhexyl)phthalate	14000 JD	21000
Di-n-octylphthalate	21000 UD	21000
Benzo(b)fluoranthene	4000 JD	21000
Benzo(k)fluoranthene	21000 UD	21000
Benzo(a)pyrene	2400 JD	21000
Indeno(1,2,3-cd)pyrene	21000 UD	21000
Dibenz(a,h)anthracene	21000 UD	21000
Benzo(g,h,i)perylene	21000 UD	21000

Surrogate Recovery		QC LIMITS
2-Fluorophenol	28%JD	25-121%
Phenol-d5	62%JD	24-113%
2-Chlorophenol-d4	52%JD	20-130%
1,2-Dichlorobenzene-d4	54%JD	20-130%
Nitrobenzene-d5	57%JD	23-120%
2-Fluorobiphenyl	102%JD	30-115%
2,4,6-Tribromophenol	54%JD	19-122%
Terphenyl-d14	126%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S4 MS	Lab ID (HSN): 15279MS
Matrix: SOIL	Filename: 4068K05
Date Sampled: 02/22/94	Sample Size: 15.6 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 5.88

Compounds:	ug/Kg (PPB)	EQL
Phenol	180 J	1400
bis(2-Chloroethyl) ether	1400 U	1400
2-Chlorophenol	1400 U	1400
1,3-Dichlorobenzene	1400 U	1400
1,4-Dichlorobenzene	240 J	1400
1,2-Dichlorobenzene	1400 U	1400
2-Methylphenol	1400 U	1400
2,2'-oxybis(1-Chloropropane)	1400 U	1400
4-Methylphenol	1400 U	1400
N-Nitroso-di-n-propylamine	290 J	1400
Hexachloroethane	1400 U	1400
Nitrobenzene	1400 U	1400
Isophorone	1400 U	1400
2-Nitrophenol	1400 U	1400
2,4-Dimethylphenol	1400 U	1400
bis(2-Chloroethoxy) methane	1400 U	1400
2,4-Dichlorophenol	1400 U	1400
1,2,4-Trichlorobenzene	290 J	1400
Naphthalene	1400 U	1400
4-Chloroaniline	1400 U	1400
Hexachlorobutadiene	1400 U	1400
4-Chloro-3-methylphenol	1400 U	1400
2-Methylnaphthalene	1400 U	1400
Hexachlorocyclopentadiene	1400 U	1400
2,4,6-Trichlorophenol	1400 U	1400
2,4,5-Trichlorophenol	3400 U	3400
2-Chloronaphthalene	1400 U	1400
2-Nitroaniline	3400 U	3400
Dimethylphthalate	1400 U	1400
Acenaphthylene	1400 U	1400
2,6-Dinitrotoluene	1400 U	1400
3-Nitroaniline	3400 U	3400
Acenaphthene	340 J	1400
2,4-Dinitrophenol	3400 U	3400
4-Nitrophenol	380 J	3400
Dibenzofuran	1400 U	1400
2,4-Dinitrotoluene	320 J	1400
Diethylphthalate	1400 U	1400
4-Chlorophenyl-phenylether	1400 U	1400
Fluorene	1400 U	1400
4-Nitroaniline	3400 U	3400
4,6-Dinitro-2-methylphenol	3400 U	3400

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S4 MS  
Matrix: SOIL

Lab ID (HSN): 15279MS  
Filename: 4068K05

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	1400 U	1400
4-Bromophenyl-phenylether	1400 U	1400
Hexachlorobenzene	1400 U	1400
Pentachlorophenol	3400 U	3400
Phenanthrene	650 J	1400
Anthracene	150 J	1400
Carbazole	1400 U	1400
Di-n-butylphthalate	1400 U	1400
Fluoranthene	640 J	1400
Pyrene	1300 J	1400
Butylbenzylphthalate	1400 U	1400
3,3'-Dichlorobenzidine	1400 U	1400
Benz(a)anthracene	370 J	1400
Chrysene	400 J	1400
bis(2-Ethylhexyl)phthalate	1200 J	1400
Di-n-octylphthalate	1400 U	1400
Benzo(b)fluoranthene	480 J	1400
Benzo(k)fluoranthene	160 J	1400
Benzo(a)pyrene	310 J	1400
Indeno(1,2,3-cd)pyrene	330 J	1400
Dibenz(a,h)anthracene	1400 U	1400
Benzo(g,h,i)perylene	1400 U	1400

Surrogate Recovery		QC LIMITS
2-Fluorophenol	1%J	25-121%
Phenol-d5	3%J	24-113%
2-Chlorophenol-d4	3%J	20-130%
1,2-Dichlorobenzene-d4	7%J	20-130%
Nitrobenzene-d5	8%J	23-120%
2-Fluorobiphenyl	9%J	30-115%
2,4,6-Trichlorophenol	0%U	19-122%
Terphenyl-414	10%J	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)

EQL = Estimated Quantitation Limit (lower calibration limit)

U = Undetected at the given EQL

J = Detected below the EQL (estimated value)

E = Exceeds the upper calibration limit (estimated value)

B = Also detected in the associated Blank

Note: All results are reported on a dry weight basis.

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
November 1986, 3rd Edition.

HPN: 2757

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S4 MSD	Lab ID (HSN): 15279MSD
Matrix: SOIL	Filename: 4068K06
Date Sampled: 02/22/94	Sample Size: 15.3 grams
Date Received: 02/24/94	Extract Vol.: 2000 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 5.88

Compounds:	ug/Kg (PPB)	EQL
Phenol	6100	2800
bis(2-Chloroethyl) ether	2800 U	2800
2-Chlorophenol	2500 J	2800
1,3-Dichlorobenzene	2800 U	2800
1,4-Dichlorobenzene	1700 J	2800
1,2-Dichlorobenzene	2800 U	2800
2-Methylphenol	2800 U	2800
2,2'-oxybis(1-Chloropropane)	2800 U	2800
4-Methylphenol	2800 U	2800
N-Nitroso-di-n-propylamine	2100 J	2800
Hexachloroethane	2800 U	2800
Nitrobenzene	2800 U	2800
Isophorone	2800 U	2800
2-Nitrophenol	2800 U	2800
2,4-Dimethylphenol	2800 U	2800
bis(2-Chloroethoxy) methane	2800 U	2800
2,4-Dichlorophenol	2800 U	2800
1,2,4-Trichlorobenzene	2800	2800
Naphthalene	2800 U	2800
4-Chloroaniline	2800 U	2800
Hexachlorobutadiene	2800 U	2800
4-Chloro-3-methylphenol	2900	2800
2-Methylnaphthalene	2800 U	2800
Hexachlorocyclopentadiene	2800 U	2800
2,4,6-Trichlorophenol	2800 U	2800
2,4,5-Trichlorophenol	6900 U	6900
2-Chloronaphthalene	2800 U	2800
2-Nitroaniline	6900 U	6900
Dimethylphthalate	2800 U	2800
Acenaphthylene	2800 U	2800
2,6-Dinitrotoluene	2800 U	2800
3-Nitroaniline	6900 U	6900
Acenaphthene	2900	2800
2,4-Dinitrophenol	6900 U	6900
4-Nitrophenol	6900 U	6900
Dibenzofuran	2800 U	2800
2,4-Dinitrotoluene	3100	2800
Diethylphthalate	2800 U	2800
4-Chlorophenyl-phenylether	2800 U	2800
Fluorene	2800 U	2800
4-Nitroaniline	6900 U	6900
4,6-Dinitro-2-methylphenol	6900 U	6900

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S4 MSD  
Matrix: SOIL

Lab ID (HSN): 15279MSD  
Filename: 4068K06

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	2800 U	2800
4-Bromophenyl-phenylether	2800 U	2800
Hexachlorobenzene	2800 U	2800
Pentachlorophenol	6900 U	6900
Phenanthrene	1600 J	2800
Anthracene	2800 U	2800
Carbazole	2800 U	2800
Di-n-butylphthalate	17000 B	2800
Fluoranthene	2800 U	2800
Pyrene	6900 J Y	2800
Butylbenzylphthalate	2800 U Y	2800
3,3'-Dichlorobenzidine	2800 U Y	2800
Benz(a)anthracene	2400 J Y	2800
Chrysene	3000 J Y	2800
bis(2-Ethylhexyl)phthalate	6500 J Y	2800
Di-n-octylphthalate	2800 U	2800
Benzo(b)fluoranthene	4800	2800
Benzo(k)fluoranthene	1600 J	2800
Benzo(a)pyrene	2600 J	2800
Indeno(1,2,3-cd)pyrene	2800	2800
Dibenz(a,h)anthracene	2800 U	2800
Benzo(g,h,i)perylene	2900	2800

Surrogate Recovery	QC LIMITS	
2-Fluorophenol	33%J	25-121%
Phenol-d5	52%J	24-113%
2-Chlorophenol-d4	48%J	20-130%
1,2-Dichlorobenzene-d4	54%J	20-130%
Nitrobenzene-d5	58%J	23-120%
2-Fluorobiphenyl	94%	30-115%
2,4,6-Tribromophenol	38%J	19-122%
Terphenyl-d14	77%J Y	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
EQL = Estimated Quantitation Limit (lower calibration limit)  
U = Undetected at the given EQL  
J = Detected below the EQL (estimated value)  
E = Exceeds the upper calibration limit (estimated value)  
B = Also detected in the associated Blank  
Y = Associated internal standard failed method criteria

Note: All results are reported on a dry weight basis.  
Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
November 1986, 3rd Edition.

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HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S5	Lab ID (HSN): 15283
Matrix: SOIL	Filename: 4068K11
Date Sampled: 02/22/94	Sample Size: 15.4 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 22.42

Compounds:	ug/Kg (PPB)	EQL
Phenol	190 J	1700
bis(2-Chloroethyl) ether	1700 U	1700
2-Chlorophenol	1700 U	1700
1,3-Dichlorobenzene	1700 U	1700
1,4-Dichlorobenzene	1700 U	1700
1,2-Dichlorobenzene	1700 U	1700
2-Methylphenol	1700 U	1700
2,2'-oxybis(1-Chloropropane)	1700 U	1700
4-Methylphenol	1700 U	1700
N-Nitroso-di-n-propylamine	1700 U	1700
Hexachloroethane	1700 U	1700
Nitrobenzene	1700 U	1700
Isophorone	1700 U	1700
2-Nitrophenol	1700 U	1700
2,4-Dimethylphenol	1700 U	1700
bis(2-Chloroethoxy) methane	1700 U	1700
2,4-Dichlorophenol	1700 U	1700
1,2,4-Trichlorobenzene	720 J	1700
Naphthalene	220 J	1700
4-Chloroaniline	1700 U	1700
Hexachlorobutadiene	1700 U	1700
4-Chloro-3-methylphenol	1700 U	1700
2-Methylnaphthalene	1700 U	1700
Hexachlorocyclopentadiene	1700 U	1700
2,4,6-Trichlorophenol	1700 U	1700
2,4,5-Trichlorophenol	4200 U	4200
2-Chloronaphthalene	1700 U	1700
2-Nitroaniline	4200 U	4200
Dimethylphthalate	1700 U	1700
Acenaphthylene	1700 U	1700
2,6-Dinitrotoluene	1700 U	1700
3-Nitroaniline	4200 U	4200
Acenaphthene	340 J	1700
2,4-Dinitrophenol	4200 U	4200
4-Nitrophenol	4200 U	4200
Dibenzofuran	1700 U	1700
2,4-Dinitrotoluene	1700 U	1700
Diethylphthalate	1700 U	1700
4-Chlorophenyl-phenylether	1700 U	1700
Fluorene	410 J	1700
4-Nitroaniline	4200 U	4200
4,6-Dinitro-2-methylphenol	4200 U	4200

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S5  
Matrix: SOIL

Lab ID (HSN): 15283  
Filename: 4068K11

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	1700 U	1700
4-Bromophenyl-phenylether	1700 U	1700
Hexachlorobenzene	1700 U	1700
Pentachlorophenol	4200 U	4200
Phenanthrene	3500	1700
Anthracene	830 J	1700
Carbazole	1700 U	1700
Di-n-butylphthalate	1300 JB	1700
Fluoranthene	3900	1700
Pyrene	7900 J Y	1700
Butylbenzylphthalate	1700 U Y	1700
3,3'-Dichlorobenzidine	1700 U Y	1700
Benz(a)anthracene	3800 J Y	1700
Chrysene	3800 J Y	1700
bis(2-Ethylhexyl)phthalate	30000 E Y	1700
Di-n-octylphthalate	1700 U	1700
Benzo(b)fluoranthene	5800	1700
Benzo(k)fluoranthene	2200	1700
Benzo(a)pyrene	4400	1700
Indeno(1,2,3-cd)pyrene	4200	1700
Dibenz(a,h)anthracene	1700 U	1700
Benzo(g,h,i)perylene	4300	1700

Surrogate Recovery		QC LIMITS
2-Fluorophenol	30%	25-121%
Phenol-d5	37%	24-113%
2-Chlorophenol-d4	40%	20-130%
1,2-Dichlorobenzene-d4	46%	20-130%
Nitrobenzene-d5	31%J	23-120%
2-Fluorobiphenyl	72%	30-115%
2,4,6-Trichlorophenol	32%	19-122%
Terphenyl-114	77% Y	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 Y = Associated internal standard failed method criteria

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S5	Lab ID (HSN): 15283 DL
Matrix: SOIL	Filename: 4067L18
Date Sampled: 02/22/94	Sample Size: 15.4 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 22.42

Compounds:	ug/Kg (PPB)	EQL
Phenol	17000 UD	17000
bis(2-Chloroethyl) ether	17000 UD	17000
2-Chlorophenol	17000 UD	17000
1,3-Dichlorobenzene	17000 UD	17000
1,4-Dichlorobenzene	17000 UD	17000
1,2-Dichlorobenzene	17000 UD	17000
2-Methylphenol	17000 UD	17000
2,2'-oxybis(1-Chloropropane)	17000 UD	17000
4-Methylphenol	17000 UD	17000
N-Nitroso-di-n-propylamine	17000 UD	17000
Hexachloroethane	17000 UD	17000
Nitrobenzene	17000 UD	17000
Isophorone	17000 UD	17000
2-Nitrophenol	17000 UD	17000
2,4-Dimethylphenol	17000 UD	17000
bis(2-Chloroethoxy) methane	17000 UD	17000
2,4-Dichlorophenol	17000 UD	17000
1,2,4-Trichlorobenzene	17000 UD	17000
Naphthalene	17000 UD	17000
4-Chloroaniline	17000 UD	17000
Hexachlorobutadiene	17000 UD	17000
4-Chloro-3-methylphenol	17000 UD	17000
2-Methylnaphthalene	17000 UD	17000
Hexachlorocyclopentadiene	17000 UD	17000
2,4,6-Trichlorophenol	17000 UD	17000
2,4,5-Trichlorophenol	42000 UD	42000
2-Chloronaphthalene	17000 UD	17000
2-Nitroaniline	42000 UD	42000
Dimethylphthalate	17000 UD	17000
Acenaphthylene	17000 UD	17000
2,6-Dinitrotoluene	17000 UD	17000
3-Nitroaniline	42000 UD	42000
Acenaphthene	17000 UD	17000
2,4-Dinitrophenol	42000 UD	42000
4-Nitrophenol	42000 UD	42000
Dibenzofuran	17000 UD	17000
2,4-Dinitrotoluene	17000 UD	17000
Diethylphthalate	17000 UD	17000
4-Chlorophenyl-phenylether	17000 UD	17000
Fluorene	17000 UD	17000
4-Nitroaniline	42000 UD	42000
4,6-Dinitro-2-methylphenol	42000 UD	42000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S5  
Matrix: SOIL

Lab ID (HSN): 15283 DL  
Filename: 4067L18

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	17000 UD	17000
4-Bromophenyl-phenylether	17000 UD	17000
Hexachlorobenzene	17000 UD	17000
Pentachlorophenol	42000 UD	42000
Phenanthrene	4500 JD	17000
Anthracene	17000 UD	17000
Carbazole	17000 UD	17000
Di-n-butylphthalate	2800 JDB	17000
Fluoranthene	5800 JD	17000
Pyrene	10000 JD	17000
Butylbenzylphthalate	17000 UD	17000
3,3'-Dichlorobenzidine	17000 UD	17000
Benz(a)anthracene	4100 JD	17000
Chrysene	3800 JD	17000
bis(2-Ethylhexyl)phthalate	56000 D	17000
Di-n-octylphthalate	17000 UD	17000
Benzo(b)fluoranthene	6900 JD	17000
Benzo(k)fluoranthene	17000 UD	17000
Benzo(a)pyrene	4500 JD	17000
Indeno(1,2,3-cd)pyrene	5000 JD	17000
Dibenz(a,h)anthracene	17000 UD	17000
Benzo(g,h,i)perylene	5000 JD	17000

Surrogate Recovery		QC LIMITS
2-Fluorophenol	41%JD	25-121%
Phenol-d5	49%JD	24-113%
2-Chlorophenol-d4	47%JD	20-130%
1,2-Dichlorobenzene-d4	46%JD	20-130%
Nitrobenzene-d5	48%JD	23-120%
2-Fluorobiphenyl	66%JD	30-115%
2,4,6-Tribromophenol	36%JD	19-122%
Terphenyl-d14	96%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S6	Lab ID (HSN): 15287
Matrix: SOIL	Filename: 4068K12
Date Sampled: 02/22/94	Sample Size: 15.2 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/10/94	GPC Factor: 2
	% Moisture: 17.96

Compounds:	ug/Kg (PPB)	EQL
Phenol	1600 U	1600
bis(2-Chloroethyl) ether	1600 U	1600
2-Chlorophenol	1600 U	1600
1,3-Dichlorobenzene	1600 U	1600
1,4-Dichlorobenzene	1600 U	1600
1,2-Dichlorobenzene	1600 U	1600
2-Methylphenol	1600 U	1600
2,2'-oxybis(1-Chloropropane)	1600 U	1600
4-Methylphenol	1600 U	1600
N-Nitroso-di-n-propylamine	1600 U	1600
Hexachloroethane	1600 U	1600
Nitrobenzene	1600 U	1600
Isophorone	1600 U	1600
2-Nitrophenol	1600 U	1600
2,4-Dimethylphenol	1600 U	1600
bis(2-Chloroethoxy)methane	1600 U	1600
2,4-Dichlorophenol	1600 U	1600
1,2,4-Trichlorobenzene	690 J	1600
Naphthalene	510 J	1600
4-Chloroaniline	1600 U	1600
Hexachlorobutadiene	1600 U	1600
4-Chloro-3-methylphenol	1600 U	1600
2-Methylnaphthalene	330 J	1600
Hexachlorocyclopentadiene	1600 U	1600
2,4,6-Trichlorophenol	1600 U	1600
2,4,5-Trichlorophenol	4000 U	4000
2-Chloronaphthalene	1600 U	1600
2-Nitroaniline	4000 U	4000
Dimethylphthalate	1600 U	1600
Acenaphthylene	1600 U	1600
2,6-Dinitrotoluene	1600 U	1600
3-Nitroaniline	4000 U	4000
Acenaphthene	740 J	1600
2,4-Dinitrophenol	4000 U	4000
4-Nitrophenol	4000 U	4000
Dibenzofuran	760 J	1600
2,4-Dinitrotoluene	1600 U	1600
Diethylphthalate	1600 U	1600
4-Chlorophenyl-phenylether	1600 U	1600
Fluorene	1100 J	1600
4-Nitroaniline	4000 U	4000
4,6-Dinitro-2-methylphenol	4000 U	4000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S6  
Matrix: SOIL

Lab ID (HSN): 15287  
Filename: 4068K12

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	1600 U	1600
4-Bromophenyl-phenylether	1600 U	1600
Hexachlorobenzene	1600 U	1600
Pentachlorophenol	4000 U	4000
Phenanthrene	7900	1600
Anthracene	2100	1600
Carbazole	760 J	1600
Di-n-butylphthalate	820 JB	1600
Fluoranthene	6700	1600
Pyrene	13000 E Y	1600
Butylbenzylphthalate	1600 U Y	1600
3,3'-Dichlorobenzidine	1600 U Y	1600
Benz(a)anthracene	6300 J Y	1600
Chrysene	5700 J Y	1600
bis(2-Ethylhexyl)phthalate	22000 E Y	1600
Di-n-octylphthalate	1600 U	1600
Benzo(b)fluoranthene	7100	1600
Benzo(k)fluoranthene	3000	1600
Benzo(a)pyrene	5700	1600
Indeno(1,2,3-cd)pyrene	4700	1600
Dibenz(a,h)anthracene	1600 U	1600
Benzo(g,h,i)perylene	4000	1600

Surrogate Recovery		QC LIMITS
2-Fluorophenol	45%	25-121%
Phenol-d5	47%	24-113%
2-Chlorophenol-d4	54%	20-130%
1,2-Dichlorobenzene-d4	67%	20-130%
Nitrobenzene-d5	43%	23-120%
2-Fluorobiphenyl	77%	30-115%
2,4,6-Tribromophenol	31%	19-122%
Terphenyl-d14	82%	Y 18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 Y = Associated internal standard failed method criteria

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

HPN: 2757

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S6	Lab ID (HSN): 15287 DL
Matrix: SOIL	Filename: 4067L19
Date Sampled: 02/22/94	Sample Size: 15.2 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 17.96

Compounds:	ug/Kg (PPB)	EQL
Phenol	16000 UD	16000
bis(2-Chloroethyl) ether	16000 UD	16000
2-Chlorophenol	16000 UD	16000
1,3-Dichlorobenzene	16000 UD	16000
1,4-Dichlorobenzene	16000 UD	16000
1,2-Dichlorobenzene	16000 UD	16000
2-Methylphenol	16000 UD	16000
2,2'-oxybis(1-Chloropropane)	16000 UD	16000
4-Methylphenol	16000 UD	16000
N-Nitroso-di-n-propylamine	16000 UD	16000
Hexachloroethane	16000 UD	16000
Nitrobenzene	16000 UD	16000
Isophorone	16000 UD	16000
2-Nitrophenol	16000 UD	16000
2,4-Dimethylphenol	16000 UD	16000
bis(2-Chloroethoxy) methane	16000 UD	16000
2,4-Dichlorophenol	16000 UD	16000
1,2,4-Trichlorobenzene	16000 UD	16000
Naphthalene	16000 UD	16000
4-Chloroaniline	16000 UD	16000
Hexachlorobutadiene	16000 UD	16000
4-Chloro-3-methylphenol	16000 UD	16000
2-Methylnaphthalene	16000 UD	16000
Hexachlorocyclopentadiene	16000 UD	16000
2,4,6-Trichlorophenol	16000 UD	16000
2,4,5-Trichlorophenol	40000 UD	40000
2-Chloronaphthalene	16000 UD	16000
2-Nitroaniline	40000 UD	40000
Dimethylphthalate	16000 UD	16000
Acenaphthylene	16000 UD	16000
2,6-Dinitrotoluene	16000 UD	16000
3-Nitroaniline	40000 UD	40000
Acenaphthene	16000 UD	16000
2,4-Dinitrophenol	40000 UD	40000
4-Nitrophenol	40000 UD	40000
Dibenzofuran	16000 UD	16000
2,4-Dinitrotoluene	16000 UD	16000
Diethylphthalate	16000 UD	16000
4-Chlorophenyl-phenylether	16000 UD	16000
Fluorene	16000 UD	16000
4-Nitroaniline	40000 UD	40000
4,6-Dinitro-2-methylphenol	40000 UD	40000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S6  
Matrix: SOIL

Lab ID (HSN): 15287 DL  
Filename: 4067L19

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	16000 UD	16000
4-Bromophenyl-phenylether	16000 UD	16000
Hexachlorobenzene	16000 UD	16000
Pentachlorophenol	40000 UD	40000
Phenanthrene	9700 JD	16000
Anthracene	2900 JD	16000
Carbazole	16000 UD	16000
Di-n-butylphthalate	1800 JDB	16000
Fluoranthene	10000 JD	16000
Pyrene	17000 D	16000
Butylbenzylphthalate	16000 UD	16000
3,3'-Dichlorobenzidine	16000 UD	16000
Benz(a)anthracene	6400 JD	16000
Chrysene	5900 JD	16000
bis(2-Ethylhexyl)phthalate	42000 D	16000
Di-n-octylphthalate	16000 UD	16000
Benzo(b)fluoranthene	8000 JD	16000
Benzo(k)fluoranthene	3500 JD	16000
Benzo(a)pyrene	6000 JD	16000
Indeno(1,2,3-cd)pyrene	5900 JD	16000
Dibenz(a,h)anthracene	16000 UD	16000
Benzo(g,h,i)perylene	5400 JD	16000

Surrogate Recovery		QC LIMITS
2-Fluorophenol	63%JD	25-121%
Phenol-d5	71%JD	24-113%
2-Chlorophenol-d4	65%JD	20-130%
1,2-Dichlorobenzene-d4	66%JD	20-130%
Nitrobenzene-d5	66%JD	23-120%
2-Fluorobiphenyl	76%JD	30-115%
2,4,6-Tribromophenol	35%JD	19-122%
Terphenyl-d14	108%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)

EQL = Estimated Quantitation Limit (lower calibration limit)

U = Undetected at the given EQL

J = Detected below the EQL (estimated value)

E = Exceeds the upper calibration limit (estimated value)

B = Also detected in the associated Blank

D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
November 1986, 3rd Edition.

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HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S7	Lab ID (HSN): 15289
Matrix: SOIL	Filename: 4068K13
Date Sampled: 02/22/94	Sample Size: 15.3 grams
Date Received: 02/24/94	Extract Vol.: 500 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/10/94	GPC Factor: 2
	% Moisture: 30.67

Compounds:	ug/Kg (PPB)	EQL
Phenol	940 U	940
bis(2-Chloroethyl) ether	940 U	940
2-Chlorophenol	940 U	940
1,3-Dichlorobenzene	940 U	940
1,4-Dichlorobenzene	940 U	940
1,2-Dichlorobenzene	940 U	940
2-Methylphenol	940 U	940
2,2'-oxybis(1-Chloropropane)	940 U	940
4-Methylphenol	940 U	940
N-Nitroso-di-n-propylamine	940 U	940
Hexachloroethane	940 U	940
Nitrobenzene	940 U	940
Isophorone	940 U	940
2-Nitrophenol	940 U	940
2,4-Dimethylphenol	940 U	940
bis(2-Chloroethoxy) methane	940 U	940
2,4-Dichlorophenol	940 U	940
1,2,4-Trichlorobenzene	430 J	940
Naphthalene	260 J	940
4-Chloroaniline	940 U	940
Hexachlorobutadiene	940 U	940
4-Chloro-3-methylphenol	940 U	940
2-Methylnaphthalene	550 J	940
Hexachlorocyclopentadiene	940 U	940
2,4,6-Trichlorophenol	940 U	940
2,4,5-Trichlorophenol	2400 U	2400
2-Chloronaphthalene	940 U	940
2-Nitroaniline	2400 U	2400
Dimethylphthalate	940 U	940
Acenaphthylene	940 U	940
2,6-Dinitrotoluene	940 U	940
3-Nitroaniline	2400 U	2400
Acenaphthene	250 J	940
2,4-Dinitrophenol	2400 U	2400
4-Nitrophenol	2400 U	2400
Dibenzofuran	280 J	940
2,4-Dinitrotoluene	940 U	940
Diethylphthalate	940 U	940
4-Chlorophenyl-phenylether	940 U	940
Fluorene	290 J	940
4-Nitroaniline	2400 U	2400
4,6-Dinitro-2-methylphenol	2400 U	2400

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S7  
Matrix: SOIL

Lab ID (HSN): 15289  
Filename: 4068K13

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	940 U	940
4-Bromophenyl-phenylether	940 U	940
Hexachlorobenzene	940 U	940
Pentachlorophenol	2400 U	2400
Phenanthrene	2100	940
Anthracene	580 J	940
Carbazole	940 U	940
Di-n-butylphthalate	800 JB	940
Fluoranthene	2700	940
Pyrene	5400 J Y	940
Butylbenzylphthalate	940 U Y	940
3,3'-Dichlorobenzidine	940 U Y	940
Benz(a)anthracene	2100 Y	940
Chrysene	2300 Y	940
bis(2-Ethylhexyl)phthalate	9400 E Y	940
Di-n-octylphthalate	940 U	940
Benzo(b)fluoranthene	3600	940
Benzo(k)fluoranthene	1200	940
Benzo(a)pyrene	2200	940
Indeno(1,2,3-cd)pyrene	2100	940
Dibenz(a,h)anthracene	460 J	940
Benzo(g,h,i)perylene	1900	940

Surrogate Recovery		QC LIMITS
2-Fluorophenol	30%	25-121%
Phenol-d5	36%	24-113%
2-Chlorophenol-d4	41%	20-130%
1,2-Dichlorobenzene-d4	41%	20-130%
Nitrobenzene-d5	30%	23-120%
2-Fluorobiphenyl	71%	30-115%
2,4,6-Tribromophenol	47%	19-122%
Terphenyl-d14	75%	Y 18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 Y = Associated internal standard failed method criteria

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S7	Lab ID (HSN): 15289 DL
Matrix: SOIL	Filename: 4067L20
Date Sampled: 02/22/94	Sample Size: 15.3 grams
Date Received: 02/24/94	Extract Vol.: 500 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 30.67

Compounds:	ug/Kg (PPB)	EQL
Phenol	9400 UD	9400
bis(2-Chloroethyl) ether	9400 UD	9400
2-Chlorophenol	9400 UD	9400
1,3-Dichlorobenzene	9400 UD	9400
1,4-Dichlorobenzene	9400 UD	9400
1,2-Dichlorobenzene	9400 UD	9400
2-Methylphenol	9400 UD	9400
2,2'-oxybis(1-Chloropropane)	9400 UD	9400
4-Methylphenol	9400 UD	9400
N-Nitroso-di-n-propylamine	9400 UD	9400
Hexachloroethane	9400 UD	9400
Nitrobenzene	9400 UD	9400
Isophorone	9400 UD	9400
2-Nitrophenol	9400 UD	9400
2,4-Dimethylphenol	9400 UD	9400
bis(2-Chloroethoxy) methane	9400 UD	9400
2,4-Dichlorophenol	9400 UD	9400
1,2,4-Trichlorobenzene	9400 UD	9400
Naphthalene	9400 UD	9400
4-Chloroaniline	9400 UD	9400
Hexachlorobutadiene	9400 UD	9400
4-Chloro-3-methylphenol	9400 UD	9400
2-Methylnaphthalene	9400 UD	9400
Hexachlorocyclopentadiene	9400 UD	9400
2,4,6-Trichlorophenol	9400 UD	9400
2,4,5-Trichlorophenol	24000 UD	24000
2-Chloronaphthalene	9400 UD	9400
2-Nitroaniline	24000 UD	24000
Dimethylphthalate	9400 UD	9400
Acenaphthylene	9400 UD	9400
2,6-Dinitrotoluene	9400 UD	9400
3-Nitroaniline	24000 UD	24000
Acenaphthene	9400 UD	9400
2,4-Dinitrophenol	24000 UD	24000
4-Nitrophenol	24000 UD	24000
Dibenzofuran	9400 UD	9400
2,4-Dinitrotoluene	9400 UD	9400
Diethylphthalate	9400 UD	9400
4-Chlorophenyl-phenylether	9400 UD	9400
Fluorene	9400 UD	9400
4-Nitroaniline	24000 UD	24000
4,6-Dinitro-2-methylphenol	24000 UD	24000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S7  
Matrix: SOIL

Lab ID (HSN): 15289 DL  
Filename: 4067L20

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	9400 UD	9400
4-Bromophenyl-phenylether	9400 UD	9400
Hexachlorobenzene	9400 UD	9400
Pentachlorophenol	24000 UD	24000
Phenanthrene	2200 JD	9400
Anthracene	9400 UD	9400
Carbazole	9400 UD	9400
Di-n-butylphthalate	1100 JDB	9400
Fluoranthene	3200 JD	9400
Pyrene	7700 JD	9400
Butylbenzylphthalate	9400 UD	9400
3,3'-Dichlorobenzidine	9400 UD	9400
Benz(a)anthracene	2200 JD	9400
Chrysene	2400 JD	9400
bis(2-Ethylhexyl)phthalate	18000 D	9400
Di-n-octylphthalate	9400 UD	9400
Benzo(b)fluoranthene	3700 JD	9400
Benzo(k)fluoranthene	940 JD	9400
Benzo(a)pyrene	2400 JD	9400
Indeno(1,2,3-cd)pyrene	2400 JD	9400
Dibenz(a,h)anthracene	9400 UD	9400
Benzo(g,h,i)perylene	2500 JD	9400

Surrogate Recovery		QC LIMITS
2-Fluorophenol	39%JD	25-121%
Phenol-d5	51%JD	24-113%
2-Chlorophenol-d4	46%JD	20-130%
1,2-Dichlorobenzene-d4	39%JD	20-130%
Nitrobenzene-d5	45%JD	23-120%
2-Fluorobiphenyl	70%JD	30-115%
2,4,6-Tribromophenol	55%JD	19-122%
Terphenyl-d14	108%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

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TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S8	Lab ID (HSN): 15290
Matrix: SOIL	Filename: 4068K14
Date Sampled: 02/22/94	Sample Size: 15.3 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/10/94	GPC Factor: 2
	% Moisture: 23.54

Compounds:	ug/Kg (PPB)	EQL
Phenol	1700 U	1700
bis(2-Chloroethyl) ether	1700 U	1700
2-Chlorophenol	1700 U	1700
1,3-Dichlorobenzene	1700 U	1700
1,4-Dichlorobenzene	1700 U	1700
1,2-Dichlorobenzene	1700 U	1700
2-Methylphenol	1700 U	1700
2,2'-oxybis(1-Chloropropane)	1700 U	1700
4-Methylphenol	1700 U	1700
N-Nitroso-di-n-propylamine	1700 U	1700
Hexachloroethane	1700 U	1700
Nitrobenzene	1700 U	1700
Isophorone	1700 U	1700
2-Nitrophenol	1700 U	1700
2,4-Dimethylphenol	1700 U	1700
bis(2-Chloroethoxy) methane	1700 U	1700
2,4-Dichlorophenol	1700 U	1700
1,2,4-Trichlorobenzene	1700 U	1700
Naphthalene	250 J	1700
4-Chloroaniline	1700 U	1700
Hexachlorobutadiene	1700 U	1700
4-Chloro-3-methylphenol	1700 U	1700
2-Methylnaphthalene	480 J	1700
Hexachlorocyclopentadiene	1700 U	1700
2,4,6-Trichlorophenol	1700 U	1700
2,4,5-Trichlorophenol	4300 U	4300
2-Chloronaphthalene	1700 U	1700
2-Nitroaniline	4300 U	4300
Dimethylphthalate	1700 U	1700
Acenaphthylene	1700 U	1700
2,6-Dinitrotoluene	1700 U	1700
3-Nitroaniline	4300 U	4300
Acenaphthene	520 J	1700
2,4-Dinitrophenol	4300 U	4300
4-Nitrophenol	4300 U	4300
Dibenzofuran	230 J	1700
2,4-Dinitrotoluene	1700 U	1700
Diethylphthalate	1700 U	1700
4-Chlorophenyl-phenylether	1700 U	1700
Fluorene	200 J	1700
4-Nitroaniline	4300 U	4300
4,6-Dinitro-2-methylphenol	4300 U	4300

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S8  
Matrix: SOIL

Lab ID (HSN): 15290  
Filename: 4068K14

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	1700 U	1700
4-Bromophenyl-phenylether	1700 U	1700
Hexachlorobenzene	1700 U	1700
Pentachlorophenol	4300 U	4300
Phenanthrene	2900	1700
Anthracene	420 J	1700
Carbazole	1700 U	1700
Di-n-butylphthalate	3900 B	1700
Fluoranthene	3600	1700
Pyrene	7600 J Y	1700
Butylbenzylphthalate	4500 J Y	1700
3,3'-Dichlorobenzidine	1700 U Y	1700
Benz(a)anthracene	3800 J Y	1700
Chrysene	4700 J Y	1700
bis(2-Ethylhexyl)phthalate	4700 J Y	1700
Di-n-octylphthalate	1700 U	1700
Benzo(b)fluoranthene	7600	1700
Benzo(k)fluoranthene	2400	1700
Benzo(a)pyrene	5200	1700
Indeno(1,2,3-cd)pyrene	6300	1700
Dibenz(a,h)anthracene	1100 J	1700
Benzo(g,h,i)perylene	6100	1700

Surrogate Recovery		QC LIMITS
2-Fluorophenol	43%	25-121%
Phenol-d5	45%	24-113%
2-Chlorophenol-d4	55%	20-130%
1,2-Dichlorobenzene-d4	56%	20-130%
Nitrobenzene-d5	36%J	23-120%
2-Fluorobiphenyl	75%	30-115%
2,4,6-Tribromophenol	61%	19-122%
Terphenyl-d14	96% Y	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 Y = Associated internal standard failed method criteria

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

**Huntingdon**  
Soil Sampling Engineers Environmental Scientists

HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S8	Lab ID (HSN): 15290 DL
Matrix: SOIL	Filename: 4067L21
Date Sampled: 02/22/94	Sample Size: 15.3 grams
Date Received: 02/24/94	Extract Vol.: 1000 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 23.54

Compounds:	ug/Kg (PPB)	EQL
Phenol	17000 UD	17000
bis(2-Chloroethyl) ether	17000 UD	17000
2-Chlorophenol	17000 UD	17000
1,3-Dichlorobenzene	17000 UD	17000
1,4-Dichlorobenzene	17000 UD	17000
1,2-Dichlorobenzene	17000 UD	17000
2-Methylphenol	17000 UD	17000
2,2'-oxybis(1-Chloropropane)	17000 UD	17000
4-Methylphenol	17000 UD	17000
N-Nitroso-di-n-propylamine	17000 UD	17000
Hexachloroethane	17000 UD	17000
Nitrobenzene	17000 UD	17000
Isophorone	17000 UD	17000
2-Nitrophenol	17000 UD	17000
2,4-Dimethylphenol	17000 UD	17000
bis(2-Chloroethoxy) methane	17000 UD	17000
2,4-Dichlorophenol	17000 UD	17000
1,2,4-Trichlorobenzene	17000 UD	17000
Naphthalene	17000 UD	17000
4-Chloroaniline	17000 UD	17000
Hexachlorobutadiene	17000 UD	17000
4-Chloro-3-methylphenol	17000 UD	17000
2-Methylnaphthalene	17000 UD	17000
Hexachlorocyclopentadiene	17000 UD	17000
2,4,6-Trichlorophenol	17000 UD	17000
2,4,5-Trichlorophenol	43000 UD	43000
2-Chloronaphthalene	17000 UD	17000
2-Nitroaniline	43000 UD	43000
Dimethylphthalate	17000 UD	17000
Acenaphthylene	17000 UD	17000
2,6-Dinitrotoluene	17000 UD	17000
3-Nitroaniline	43000 UD	43000
Acenaphthene	17000 UD	17000
2,4-Dinitrophenol	43000 UD	43000
4-Nitrophenol	43000 UD	43000
Dibenzofuran	17000 UD	17000
2,4-Dinitrotoluene	17000 UD	17000
Diethylphthalate	17000 UD	17000
4-Chlorophenyl-phenylether	17000 UD	17000
Fluorene	17000 UD	17000
4-Nitroaniline	43000 UD	43000
4,6-Dinitro-2-methylphenol	43000 UD	43000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S8  
Matrix: SOIL

Lab ID (HSN): 15290 DL  
Filename: 4067L21

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	17000 UD	17000
4-Bromophenyl-phenylether	17000 UD	17000
Hexachlorobenzene	17000 UD	17000
Pentachlorophenol	43000 UD	43000
Phenanthrene	3200 JD	17000
Anthracene	17000 UD	17000
Carbazole	17000 UD	17000
Di-n-butylphthalate	7000 JDB	17000
Fluoranthene	5400 JD	17000
Pyrene	8700 JD	17000
Butylbenzylphthalate	9100 JD	17000
3,3'-Dichlorobenzidine	17000 UD	17000
Benz(a)anthracene	4000 JD	17000
Chrysene	4600 JD	17000
bis(2-Ethylhexyl)phthalate	9300 JD	17000
Di-n-octylphthalate	17000 UD	17000
Benzo(b)fluoranthene	7600 JD	17000
Benzo(k)fluoranthene	2500 JD	17000
Benzo(a)pyrene	4900 JD	17000
Indeno(1,2,3-cd)pyrene	7500 JD	17000
Dibenz(a,h)anthracene	17000 UD	17000
Benzo(g,h,i)perylene	7200 JD	17000

Surrogate Recovery		QC LIMITS
2-Fluorophenol	57%JD	25-121%
Phenol-d5	65%JD	24-113%
2-Chlorophenol-d4	61%JD	20-130%
1,2-Dichlorobenzene-d4	54%JD	20-130%
Nitrobenzene-d5	56%JD	23-120%
2-Fluorobiphenyl	76%JD	30-115%
2,4,6-Tribromophenol	61%JD	19-122%
Terphenyl-d14	108%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

**Huntingdon**  
Consulting Engineers Environmental Scientists

HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S9	Lab ID (HSN): 15291
Matrix: SOIL	Filename: 4068K15
Date Sampled: 02/22/94	Sample Size: 15.1 grams
Date Received: 02/24/94	Extract Vol.: 500 uL
Date Extracted: 03/03/94	Dil. Factor: 1
Date Analyzed: 03/10/94	GPC Factor: 2
	% Moisture: 14.95

Compounds:	ug/Kg (PPB)	EQL
Phenol	780 U	780
bis(2-Chloroethyl) ether	780 U	780
2-Chlorophenol	780 U	780
1,3-Dichlorobenzene	780 U	780
1,4-Dichlorobenzene	780 U	780
1,2-Dichlorobenzene	780 U	780
2-Methylphenol	780 U	780
2,2'-oxybis(1-Chloropropane)	780 U	780
4-Methylphenol	780 U	780
N-Nitroso-di-n-propylamine	780 U	780
Hexachloroethane	780 U	780
Nitrobenzene	780 U	780
Isophorone	780 U	780
2-Nitrophenol	780 U	780
2,4-Dimethylphenol	780 U	780
bis(2-Chloroethoxy) methane	780 U	780
2,4-Dichlorophenol	780 U	780
1,2,4-Trichlorobenzene	110 J	780
Naphthalene	780 U	780
4-Chloroaniline	780 U	780
Hexachlorobutadiene	780 U	780
4-Chloro-3-methylphenol	780 U	780
2-Methylnaphthalene	90 J	780
Hexachlorocyclopentadiene	780 U	780
2,4,6-Trichlorophenol	780 U	780
2,4,5-Trichlorophenol	1900 U	1900
2-Chloronaphthalene	780 U	780
2-Nitroaniline	1900 U	1900
Dimethylphthalate	780 U	780
Acenaphthylene	780 U	780
2,6-Dinitrotoluene	780 U	780
3-Nitroaniline	1900 U	1900
Acenaphthene	780 U	780
2,4-Dinitrophenol	1900 U	1900
4-Nitrophenol	1900 U	1900
Dibenzofuran	780 U	780
2,4-Dinitrotoluene	780 U	780
Diethylphthalate	780 U	780
4-Chlorophenyl-phenylether	780 U	780
Fluorene	110 J	780
4-Nitroaniline	1900 U	1900
4,6-Dinitro-2-methylphenol	1900 U	1900

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S9  
Matrix: SOIL

Lab ID (HSN): 15291  
Filename: 4068K15

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	780 U	780
4-Bromophenyl-phenylether	780 U	780
Hexachlorobenzene	780 U	780
Pentachlorophenol	1900 U	1900
Phenanthrene	1100	780
Anthracene	190 J	780
Carbazole	780 U	780
Di-n-butylphthalate	620 JB	780
Fluoranthene	1500	780
Pyrene	4100 J Y	780
Butylbenzylphthalate	780 U Y	780
3,3'-Dichlorobenzidine	780 U Y	780
Benz(a)anthracene	1500 J Y	780
Chrysene	1500 J Y	780
bis(2-Ethylhexyl)phthalate	4300 J Y	780
Di-n-octylphthalate	780 U	780
Benzo(b)fluoranthene	2800	780
Benzo(k)fluoranthene	860	780
Benzo(a)pyrene	1400	780
Indeno(1,2,3-cd)pyrene	1500	780
Dibenz(a,h)anthracene	780 U	780
Benzo(g,h,i)perylene	1400	780

Surrogate Recovery		QC LIMITS
2-Fluorophenol	30%	25-121%
Phenol-d5	41%	24-113%
2-Chlorophenol-d4	45%	20-130%
1,2-Dichlorobenzene-d4	61%	20-130%
Nitrobenzene-d5	42%	23-120%
2-Fluorobiphenyl	75%	30-115%
2,4,6-Tribromophenol	22%	19-122%
Terphenyl-d14	92%	Y 18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 Y = Associated internal standard failed method criteria

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

**Huntingdon**  
Consulting Engineers Environmental Scientists

HPN: 2757

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S9	Lab ID (HSN): 15291 DL
Matrix: SOIL	Filename: 4067L22
Date Sampled: 02/22/94	Sample Size: 15.1 grams
Date Received: 02/24/94	Extract Vol.: 500 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 14.95

Compounds:	ug/Kg (PPB)	EQL
Phenol	7800 UD	7800
bis(2-Chloroethyl) ether	7800 UD	7800
2-Chlorophenol	7800 UD	7800
1,3-Dichlorobenzene	7800 UD	7800
1,4-Dichlorobenzene	7800 UD	7800
1,2-Dichlorobenzene	7800 UD	7800
2-Methylphenol	7800 UD	7800
2,2'-oxybis(1-Chloropropane)	7800 UD	7800
4-Methylphenol	7800 UD	7800
N-Nitroso-di-n-propylamine	7800 UD	7800
Hexachloroethane	7800 UD	7800
Nitrobenzene	7800 UD	7800
Isophorone	7800 UD	7800
2-Nitrophenol	7800 UD	7800
2,4-Dimethylphenol	7800 UD	7800
bis(2-Chloroethoxy)methane	7800 UD	7800
2,4-Dichlorophenol	7800 UD	7800
1,2,4-Trichlorobenzene	7800 UD	7800
Naphthalene	7800 UD	7800
4-Chloroaniline	7800 UD	7800
Hexachlorobutadiene	7800 UD	7800
4-Chloro-3-methylphenol	7800 UD	7800
2-Methylnaphthalene	7800 UD	7800
Hexachlorocyclopentadiene	7800 UD	7800
2,4,6-Trichlorophenol	7800 UD	7800
2,4,5-Trichlorophenol	19000 UD	19000
2-Chloronaphthalene	7800 UD	7800
2-Nitroaniline	19000 UD	19000
Dimethylphthalate	7800 UD	7800
Acenaphthylene	7800 UD	7800
2,6-Dinitrotoluene	7800 UD	7800
3-Nitroaniline	19000 UD	19000
Acenaphthene	7800 UD	7800
2,4-Dinitrophenol	19000 UD	19000
4-Nitrophenol	19000 UD	19000
Dibenzofuran	7800 UD	7800
2,4-Dinitrotoluene	7800 UD	7800
Diethylphthalate	7800 UD	7800
4-Chlorophenyl-phenylether	7800 UD	7800
Fluorene	7800 UD	7800
4-Nitroaniline	19000 UD	19000
4,6-Dinitro-2-methylphenol	19000 UD	19000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S9  
Matrix: SOIL

Lab ID (HSN): 15291 DL  
Filename: 4067L22

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	7800 UD	7800
4-Bromophenyl-phenylether	7800 UD	7800
Hexachlorobenzene	7800 UD	7800
Pentachlorophenol	19000 UD	19000
Phenanthrene	1400 JD	7800
Anthracene	7800 UD	7800
Carbazole	7800 UD	7800
Di-n-butylphthalate	1300 JDB	7800
Fluoranthene	2600 JD	7800
Pyrene	5200 JD	7800
Butylbenzylphthalate	7800 UD	7800
3,3'-Dichlorobenzidine	7800 UD	7800
Benz(a)anthracene	1600 JD	7800
Chrysene	1900 JD	7800
bis(2-Ethylhexyl)phthalate	9800 D	7800
Di-n-octylphthalate	7800 UD	7800
Benzo(b)fluoranthene	3100 JD	7800
Benzo(k)fluoranthene	860 JD	7800
Benzo(a)pyrene	1400 JD	7800
Indeno(1,2,3-cd)pyrene	1800 JD	7800
Dibenz(a,h)anthracene	7800 UD	7800
Benzo(g,h,i)perylene	1700 JD	7800

Surrogate Recovery		QC LIMITS
2-Fluorophenol	39%JD	25-121%
Phenol-d5	55%JD	24-113%
2-Chlorophenol-d4	53%JD	20-130%
1,2-Dichlorobenzene-d4	58%JD	20-130%
Nitrobenzene-d5	61%JD	23-120%
2-Fluorobiphenyl	78%JD	30-115%
2,4,6-Tribromophenol	24%JD	19-122%
Terphenyl-d14	115%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)  
 EQL = Estimated Quantitation Limit (lower calibration limit)  
 U = Undetected at the given EQL  
 J = Detected below the EQL (estimated value)  
 E = Exceeds the upper calibration limit (estimated value)  
 B = Also detected in the associated Blank  
 D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.  
 Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
 November 1986, 3rd Edition.

HPN: 2757

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Consulting Engineers & Environmental Scientists



TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS  
EPA METHOD 8270

Client ID: S10	Lab ID (HSN): 15292 DL
Matrix: SOIL	Filename: 4067L23
Date Sampled: 02/22/94	Sample Size: 15.2 grams
Date Received: 02/24/94	Extract Vol.: 2000 uL
Date Extracted: 03/03/94	Dil. Factor: 10
Date Analyzed: 03/09/94	GPC Factor: 2
	% Moisture: 40.38

Compounds:	ug/Kg (PPB)	EQL
Phenol	44000 UD	44000
bis(2-Chloroethyl) ether	44000 UD	44000
2-Chlorophenol	44000 UD	44000
1,3-Dichlorobenzene	44000 UD	44000
1,4-Dichlorobenzene	44000 UD	44000
1,2-Dichlorobenzene	44000 UD	44000
2-Methylphenol	44000 UD	44000
2,2'-oxybis(1-Chloropropane)	44000 UD	44000
4-Methylphenol	44000 UD	44000
N-Nitroso-di-n-propylamine	44000 UD	44000
Hexachloroethane	44000 UD	44000
Nitrobenzene	44000 UD	44000
Isophorone	44000 UD	44000
2-Nitrophenol	44000 UD	44000
2,4-Dimethylphenol	44000 UD	44000
bis(2-Chloroethoxy) methane	44000 UD	44000
2,4-Dichlorophenol	44000 UD	44000
1,2,4-Trichlorobenzene	44000 UD	44000
Naphthalene	54000 D	44000
4-Chloroaniline	44000 UD	44000
Hexachlorobutadiene	44000 UD	44000
4-Chloro-3-methylphenol	44000 UD	44000
2-Methylnaphthalene	230000 D	44000
Hexachlorocyclopentadiene	44000 UD	44000
2,4,6-Trichlorophenol	44000 UD	44000
2,4,5-Trichlorophenol	110000 UD	110000
2-Chloronaphthalene	44000 UD	44000
2-Nitroaniline	110000 UD	110000
Dimethylphthalate	44000 UD	44000
Acenaphthylene	44000 UD	44000
2,6-Dinitrotoluene	44000 UD	44000
3-Nitroaniline	110000 UD	110000
Acenaphthene	14000 JD	44000
2,4-Dinitrophenol	110000 UD	110000
4-Nitrophenol	110000 UD	110000
Dibenzofuran	44000 UD	44000
2,4-Dinitrotoluene	44000 UD	44000
Diethylphthalate	44000 UD	44000
4-Chlorophenyl-phenylether	44000 UD	44000
Fluorene	32000 JD	44000
4-Nitroaniline	110000 UD	110000
4,6-Dinitro-2-methylphenol	110000 UD	110000

(continued)

TCL SEMIVOLATILE ORGANIC COMPOUND RESULTS (CONTINUED)  
EPA METHOD 8270

Client ID: S10  
Matrix: SOIL

Lab ID (HSN): 15292 DL  
Filename: 4067L23

Compounds:	ug/Kg (PPB)	EQL
N-Nitrosodiphenylamine	44000 UD	44000
4-Bromophenyl-phenylether	44000 UD	44000
Hexachlorobenzene	44000 UD	44000
Pentachlorophenol	110000 UD	110000
Phenanthrene	88000 D	44000
Anthracene	7500 JD	44000
Carbazole	44000 UD	44000
Di-n-butylphthalate	44000 UD	44000
Fluoranthene	35000 JD	44000
Pyrene	62000 D	44000
Butylbenzylphthalate	44000 UD	44000
3,3'-Dichlorobenzidine	44000 UD	44000
Benz(a)anthracene	20000 JD	44000
Chrysene	20000 JD	44000
bis(2-Ethylhexyl)phthalate	44000 UD	44000
Di-n-octylphthalate	44000 UD	44000
Benzo(b)fluoranthene	22000 JD	44000
Benzo(k)fluoranthene	7700 JD	44000
Benzo(a)pyrene	15000 JD	44000
Indeno(1,2,3-cd)pyrene	14000 JD	44000
Dibenz(a,h)anthracene	44000 UD	44000
Benzo(g,h,i)perylene	14000 JD	44000

Surrogate Recovery		QC LIMITS
2-Fluorophenol	40%JD	25-121%
Phenol-d5	69%JD	24-113%
2-Chlorophenol-d4	61%JD	20-130%
1,2-Dichlorobenzene-d4	76%JD	20-130%
Nitrobenzene-d5	156%JD	23-120%
2-Fluorobiphenyl	92%JD	30-115%
2,4,6-Tribromophenol	88%JD	19-122%
Terphenyl-d14	132%JD	18-137%

TCL = Target Compound List EPA Contract Laboratory Program (OLM01)

EQL = Estimated Quantitation Limit (lower calibration limit)

U = Undetected at the given EQL

J = Detected below the EQL (estimated value)

E = Exceeds the upper calibration limit (estimated value)

B = Also detected in the associated Blank

D = Analysis at a secondary Dilution factor

Note: All results are reported on a dry weight basis.

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846,  
November 1986, 3rd Edition.

HPN: 2757

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Consulting Engineers Environmental Scientists



# ecology and environment, inc.


111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415

International Specialists in the Environment

## MEMORANDUM

**DATE:** March 24, 1994

**TO:** John Nordine, Project Manager, E & E, Chicago, IL

**FROM:** David Hendren, TAT-Chemist, E & E, Chicago, IL. 

**THRU:** Pat Zwilling, ATATL, E & E, Chicago, IL

**SUBJ:** Polychlorinateddibenzo Dioxins and Furans Data Quality Assurance Review for Scrap Metal site, Chicago, Cook County, Illinois

**REF:** Analytical TDD:T05-9402-807      Project TDD:T05-9402-007  
Analytical PAN:EIL0831AAA      Project PAN:EIL0831SAA

The data quality assurance review of 4 soil samples collected from the site has been completed. Analysis for polychlorinated dibenzodioxins (PCDD) and polychlorinated dibenzofurans (PCDF) was performed by Twin City Testing Corporation (Huntingdon) of St. Paul, Minnesota following U.S. EPA SW-846 Method 8290.

The samples were numbered as follows in the field. The corresponding laboratory identification number is provided:

<u>TAT Sample #</u>	corresponds to - >	<u>Laboratory Sample #</u>
S1		15270
S2		15277
S3		15278
S8		15290

### Data Qualifications:

#### I. **Holding Time:** Acceptable

The samples were collected on 2/22/94, extracted on 3/4/94 and analyzed on 3/7/94 and 3/9/94. The holding time criteria of 6 months from sample collection to extraction was satisfied. All

samples were analyzed within the 40 day limit following extraction.

**II. Instrument Performance: Acceptable**

Analysis of the calibration check solution showed that the % valley between tetrachlorodibenzodioxin (TCDD) isomers (1,2,3,4-) and (2,3,7,8-) was less than 25 %, as required.

**III. Calibration:**

**A. Initial Calibration: Acceptable**

The percent relative standard deviations (%RSD) for all analytes in the initial calibration (performed 11/9/93) was less than 15%, as required, except for OCDD (15.66%). Qualification was not judged to be necessary. All specific ion ratio criteria were achieved and signal to noise criteria were satisfied.

**B. Continuing Calibration: Acceptable**

The continuing calibration standard was analyzed before and following sample analysis. All percent difference of response factors were less than 30%, except for OCDD(34.1%) in the final calibration check run on 3/7/94. Since the initial calibration check was in control and all other parameters were acceptable, qualification was not judged to be necessary.

**IV. Method Blank: Acceptable**

A method blank was analyzed for each matrix analyzed. HxCDF, HpCDD, and OCDD were detected at 0.39 PPT, 4.4 PPT and 21.0 PPT respectively. All reported values in the samples for these analytes exceeded these levels (over five times) and qualification was not required. No other target analytes or contaminants were detected above the detection limit.

**V. Internal Standards: Acceptable**

The recoveries of the <sup>13</sup>C-internal standards were acceptable in all samples.

**VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD): Acceptable**

The percent recoveries for the Matrix Spike/Matrix Spike Duplicate (MS/MSD) were within the established quality control limits.

**VII. Overall Assessment of Data For Use:**

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance for Removal Activities" (OSWER 9360.4-01 April, 1990). Based upon the information provided, the data are acceptable for use.

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 \*TWIN CITY TESTING CORPORATION\*  
 \*METHOD 8290 ANALYSIS RESULTS \*  
 \*\*\*\*\*  
 Client....ECOLOGY & ENVIRONMENT

Client's Sample ID.....S1 (1:2.5 DILUTION)  
 TCT Sample ID.....15270  
 Analysis Date.....3/7/94 12:35  
 Filename.....V40307D  
 Injected By.....MJK  
 Total Amount Extracted...0.0129 kg  
 % Moisture.....21.2 %  
 ICAL Date.....11/9/93  
 CCAL Filename.....V40307B  
 Method Blank ID.....BLANK-15828  
 Extraction Date.....3/4/94

NATIVE ISOMERS	CONC. ng/kg	LOD ng/kg	INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF	220 *	-----	2378-TCDF-13C....	2.00	105
TOTAL TCDF	1500	-----	2378-TCDD-13C....	2.00	98
			12378-PeCDF-13C..	2.00	87
2378-TCDD	ND	11	23478-PeCDF-13C..	2.00	91
TOTAL TCDD	34	-----	12378-PeCDD-13C..	2.00	81
			123478-HxCDF-13C.	2.00	102
12378-PeCDF	94	-----	123678-HxCDF-13C.	2.00	81
23478-PeCDF	260	-----	234678-HxCDF-13C.	2.00	93
TOTAL PeCDF	1300	-----	123789-HxCDF-13C.	2.00	81
			123478-HxCDD-13C.	2.00	98
12378-PeCDD	ND	310	123678-HxCDD-13C.	2.00	97
TOTAL PeCDD	ND	-----	1234678-HpCDF-13C	2.00	73
			1234789-HpCDF-13C	2.00	72
123478-HxCDF	250	-----	1234678-HpCDD-13C	2.00	82
123678-HxCDF	160	-----	OCDD-13C.....	4.00	82
234678-HxCDF	230	-----			
123789-HxCDF	95	-----	1234-TCDD-13C....	2.00	NA
TOTAL HxCDF	2000	-----	123789-HxCDD-13C.	2.00	NA
123478-HxCDD	21	-----	2378-TCDD-37Cl4..	0.20	INT
123678-HxCDD	70	-----			
123789-HxCDD	33	-----			
TOTAL HxCDD	240	-----			
			Total 2378-TCDD		
1234678-HpCDF	900	-----	Equivalence:	265 ng/kg	
1234789-HpCDF	120	-----	(Using ITE Factors/DB-5 Data)		
TOTAL HpCDF	1500	-----			
1234678-HpCDD	730	-----			
TOTAL HpCDD	1400	-----			
OCDF	770	-----			
OCDD	4300	-----			

\* Value may include contributions from other TCDF isomers.

All values are expressed on a dry weight basis.

CONC= Concentration (Totals include 2378-substituted isomers.)  
 LOD = Limit of Detection  
 ND = Not Detected  
 NA = Not Applicable  
 INT = Interference

TCT Invoice Number....4411 94-2757

\*\*\*\*\*  
 \*TWIN CITY TESTING CORPORATION\*  
 \*METHOD 8290 ANALYSIS RESULTS\*  
 \*\*\*\*\*  
 Client....ECOLOGY & ENVIRONMENT

Client's Sample ID.....S2 (1:20 DILUTION)  
 TCT Sample ID.....15277  
 Analysis Date.....3/9/94 14:42  
 Filename.....V40309G  
 Injected By.....MJK  
 Total Amount Extracted...0.0143 kg  
 % Moisture.....29.5 %  
 ICAL Date.....11/9/93  
 CCAL Filename.....V40309B  
 Method Blank ID.....BLANK-15828  
 Extraction Date.....3/4/94

NATIVE ISOMERS	CONC. ng/kg	LOD ng/kg	INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF	ND	10000	2378-TCDF-13C....	2.00	103
TOTAL TCDF	17000	-----	2378-TCDD-13C....	2.00	60
			12378-PeCDF-13C..	2.00	89
2378-TCDD	ND	22	23478-PeCDF-13C..	2.00	120
TOTAL TCDD	580	-----	12378-PeCDD-13C..	2.00	97
			123478-HxCDF-13C.	2.00	128
12378-PeCDF	4400	-----	123678-HxCDF-13C.	2.00	88
23478-PeCDF	6300	-----	234678-HxCDF-13C.	2.00	94
TOTAL PeCDF	42000	-----	123789-HxCDF-13C.	2.00	98
			123478-HxCDD-13C.	2.00	98
12378-PeCDD	ND	4200	123678-HxCDD-13C.	2.00	90
TOTAL PeCDD	ND	-----	1234678-HpCDF-13C	2.00	95
			1234789-HpCDF-13C	2.00	71
123478-HxCDF	ND	20000	1234678-HpCDD-13C	2.00	72
123678-HxCDF	ND	4100	OCDD-13C.....	4.00	47
234678-HxCDF	2700	-----			
123789-HxCDF	890	-----	1234-TCDD-13C....	2.00	NA
TOTAL HxCDF	15000	-----	123789-HxCDD-13C.	2.00	NA
123478-HxCDD	ND	140	2378-TCDD-37C14..	0.20	INT
123678-HxCDD	250	-----			
123789-HxCDD	130	-----			
TOTAL HxCDD	380	-----			
			Total 2378-TCDD Equivalence: 4004 ng/kg (Using ITE Factors/DB-5 Data)		
1234678-HpCDF	12000	-----			
1234789-HpCDF	3600	-----			
TOTAL HpCDF	16000	-----			
1234678-HpCDD	2900	-----			
TOTAL HpCDD	5900	-----			
OCDF	30000	-----			
OCDD	22000	-----			

All values are expressed on a dry weight basis.

CONC= Concentration (Totals include 2378-substituted isomers.)  
 LOD = Limit of Detection  
 ND = Not Detected  
 NA = Not Applicable  
 INT = Interference

TCT Invoice Number....4411 94-2757

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 \*TWIN CITY TESTING CORPORATION\*  
 \*METHOD 8290 ANALYSIS RESULTS\*  
 \*\*\*\*\*  
 Client....ECOLOGY & ENVIRONMENT

Client's Sample ID.....S3 (1:2.5 DILUTION)  
 TCT Sample ID.....15278  
 Analysis Date.....3/7/94 14:30  
 Filename.....V40307F  
 Injected By.....MJK  
 Total Amount Extracted...0.0155 kg  
 % Moisture.....32.8 %  
 ICAL Date.....11/9/93  
 CCAL Filename.....V40307B  
 Method Blank ID.....BLANK-15828  
 Extraction Date.....3/4/94

NATIVE ISOMERS	CONC. ng/kg	LOD ng/kg	INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF	1700 *	-----	2378-TCDF-13C....	2.00	121
TOTAL TCDF	9400	-----	2378-TCDD-13C....	2.00	111
			12378-PeCDF-13C..	2.00	116
2378-TCDD	ND	18	23478-PeCDF-13C..	2.00	124
TOTAL TCDD	130	-----	12378-PeCDD-13C..	2.00	106
			123478-HxCDF-13C.	2.00	120
12378-PeCDF	550	-----	123678-HxCDF-13C.	2.00	91
23478-PeCDF	1300	-----	234678-HxCDF-13C.	2.00	114
TOTAL PeCDF	7600	-----	123789-HxCDF-13C.	2.00	95
			123478-HxCDD-13C.	2.00	114
12378-PeCDD	ND	160	123678-HxCDD-13C.	2.00	99
TOTAL PeCDD	ND	-----	1234678-HpCDF-13C	2.00	87
			1234789-HpCDF-13C	2.00	84
123478-HxCDF	810	-----	1234678-HpCDD-13C	2.00	87
123678-HxCDF	640	-----	OCDD-13C.....	4.00	78
234678-HxCDF	990	-----			
123789-HxCDF	220	-----	1234-TCDD-13C....	2.00	NA
TOTAL HxCDF	7700	-----	123789-HxCDD-13C.	2.00	NA
123478-HxCDD	100	-----	2378-TCDD-37Cl4..	0.20	INT
123678-HxCDD	170	-----			
123789-HxCDD	120	-----			
TOTAL HxCDD	1100	-----			
			Total 2378-TCDD		
1234678-HpCDF	3100	-----	Equivalence:	1207	ng/kg
1234789-HpCDF	330	-----	(Using ITE Factors/DB-5 Data)		
TOTAL HpCDF	4500	-----			
1234678-HpCDD	1500	-----			
TOTAL HpCDD	2900	-----			
OCDF	1600	-----			
OCDD	3900	-----			

\* Value may include contributions from other TCDF isomers.

All values are expressed on a dry weight basis.

CONC= Concentration (Totals include 2378-substituted isomers.)  
 LOD = Limit of Detection  
 ND = Not Detected  
 NA = Not Applicable  
 INT = Interference

TCT Invoice Number....4411 94-2757

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 \*TWIN CITY TESTING CORPORATION\*  
 \*METHOD 8290 ANALYSIS RESULTS \*  
 \*\*\*\*\*  
 Client....ECOLOGY & ENVIRONMENT

Client's Sample ID.....S8 (1:20 DILUTION)  
 TCT Sample ID.....15290  
 Analysis Date.....3/9/94 13:41  
 Filename.....V40309F  
 Injected By.....MJK  
 Total Amount Extracted...0.0144 kg  
 % Moisture.....29.2 %  
 ICAL Date.....11/9/93  
 CCAL Filename.....V40309B  
 Method Blank ID.....BLANK-15828  
 Extraction Date.....3/4/94

NATIVE ISOMERS	CONC. ng/kg	LOD ng/kg	INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF	ND	380	2378-TCDF-13C....	2.00	87
TOTAL TCDF	1900	-----	2378-TCDD-13C....	2.00	79
			12378-PeCDF-13C..	2.00	99
2378-TCDD	ND	17	23478-PeCDF-13C..	2.00	132
TOTAL TCDD	150	-----	12378-PeCDD-13C..	2.00	93
			123478-HxCDF-13C.	2.00	105
12378-PeCDF	ND	6000	123678-HxCDF-13C.	2.00	75
23478-PeCDF	220	-----	234678-HxCDF-13C.	2.00	91
TOTAL PeCDF	3300	-----	123789-HxCDF-13C.	2.00	87
			123478-HxCDD-13C.	2.00	92
12378-PeCDD	ND	31	123678-HxCDD-13C.	2.00	86
TOTAL PeCDD	ND	-----	1234678-HpCDF-13C	2.00	83
			1234789-HpCDF-13C	2.00	67
123478-HxCDF	500	-----	1234678-HpCDD-13C	2.00	77
123678-HxCDF	ND	340	OCDD-13C.....	4.00	60
234678-HxCDF	360	-----			
123789-HxCDF	170	-----	1234-TCDD-13C....	2.00	NA
TOTAL HxCDF	2700	-----	123789-HxCDD-13C.	2.00	NA
123478-HxCDD	29	-----	2378-TCDD-37Cl4..	0.20	INT
123678-HxCDD	670	-----			
123789-HxCDD	190	-----			
TOTAL HxCDD	1800	-----			
			Total 2378-TCDD Equivalence: 360 ng/kg (Using ITE Factors/DB-5 Data)		
1234678-HpCDF	1100	-----			
1234789-HpCDF	240	-----			
TOTAL HpCDF	1300	-----			
1234678-HpCDD	2800	-----			
TOTAL HpCDD	5700	-----			
OCDF	1600	-----			
OCDD	15000	-----			

All values are expressed on a dry weight basis.

CONC= Concentration (Totals include 2378-substituted isomers.)  
 LOD = Limit of Detection  
 ND = Not Detected  
 NA = Not Applicable  
 INT = Interference

TCT Invoice Number....4411 94-2757



**APPENDIX C**  
**RCMS COST ESTIMATE**

(Portions of this appendix were redacted which were not relevant to the Removal Action at this site.)

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Summary Report  
Initial Cost Projection Scenario: SCRAP METAL

Page: 1

Projection ID Number: IL0831SA  
Cleanup Contractor: ESE5 - ESE

Date: 05/02/94  
TAT Contractor: ECOLOGY&ENVIRON

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Cost Projection Summary

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Contractor Personnel	282,065.90
Contractor Equipment	55,316.98
Unit Rate Materials	115,944.00
At Cost Materials	1,302.50
Subcontractors	14,220.00
Waste Transportation	7,312.50
Waste Disposal	<del>702,000.00</del>
Cleanup Contractor Subtotal	1,178,161.88
Federal and State Agencies	0.00
Extramural Subtotal	1,178,161.88
15 % Extramural Contingency	176,724.28
Extramural Subtotal	1,354,886.16
TAT Personnel	97,632.00
TAT Special Projects	0.00
TAT Analytical Services	0.00
Total TAT Costs	97,632.00
Other Cost Items	0.00
Extramural Subtotal	1,452,518.16
10 % Project Contingency	145,251.82
Total Extramural Cost	1,597,769.98
EPA Regional Personnel	32,400.00
EPA Non-Regional Personnel	0.00
EPA Headquarters Direct	0.00
( 0 % of Regional Hours)	
EPA Indirect	65,880.00
EPA Total	98,280.00
Project Total	1,696,049.98

Initial Cost Projection Scenario: SCRAP METAL

Projection ID Number: IL0831SA

Date: 05/02/94

Cleanup Contractor: ESE5 - ESE

TAT Contractor: ECOLOGY&amp;ENVIROM

## Project Scope

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Number	Step/Milestone	Estimated Duration	Cost
-----	-----	-----	-----
000	GENERAL SITE COSTS	120 Days	1,696,049.98
999	ARCHIVE COSTS	120 Days	0.00
			-----
			1,696,049.98